

**ELECTRICAL
EQUIPMENT
FOR
BUILDINGS**



WESTINGHOUSE ELECTRIC & MANUFACTURING CO.



Confidence

The most important reason for specifying "Westinghouse" is summed up in one word—CONFIDENCE. Fifty-three years of building dependable equipment has made the name Westinghouse synonymous with quality. The architect, therefore, can specify Westinghouse with the confidence that he will get trouble-free apparatus and that his client will concur because he too has faith in Westinghouse products.

As every architect knows, client confidence is vitally important. Naturally, he has such confidence in his architect. But, it is even better when this is extended to products specified for the building—to products manufactured by companies with whom the client is familiar.

The Westinghouse representative provides another reason for the architect's confidence. This man is interested in the entire electrical installation, not in a single piece of equipment. Consequently, he can be depended upon to assist in specifying and supplying the equipment *best* fitted for the particular installation . . . equipment that also is coordinated with the rest of the electrical system.

The efforts of Westinghouse to merit the confidence of its customers do not stop with the installation. Many factors—severe service, fires, inadequate maintenance—may make prompt and efficient repairs necessary at any time in the future. Through a chain of 37 strategically located service shops Westinghouse is prepared to give emergency service. Because these shops are manned by trained personnel and because replacement parts of high quality are used, the repaired equipment is practically as good as when originally installed.

The confidence built up for half a century, the electrical engineering assistance that only a diversified company can give, the service organization to speed repairs in emergencies—these are all advantages beyond the quality of the equipment itself. And yet, these advantages cost not one cent extra, because Westinghouse products cost no more than those of comparable quality.



PARTNER OF THE BUILDING INDUSTRY

ELECTRICAL EQUIPMENT FOR BUILDINGS

In the compilation of this book, Westinghouse has confined the detailed information on Application, Features, How To Select, Dimensions, Typical Specifications and Where To Buy to the electrical products commonly used in the average size building. The other Westinghouse products usually found only in larger structures, briefly are described in the back part of this catalog.

As a further aid to the architect, "Check Lists" of the

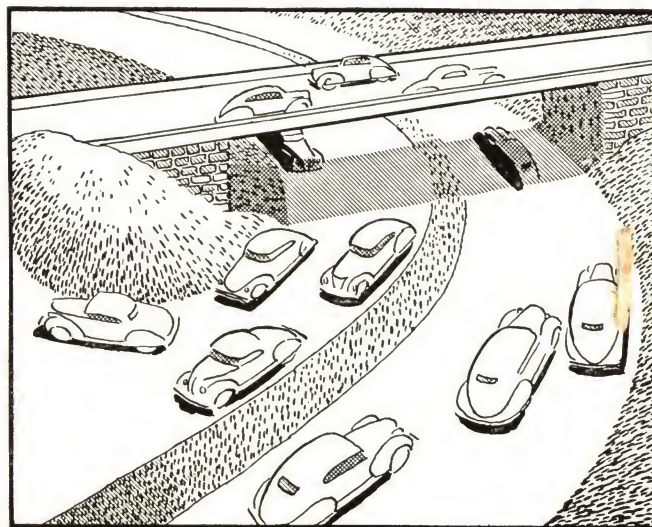
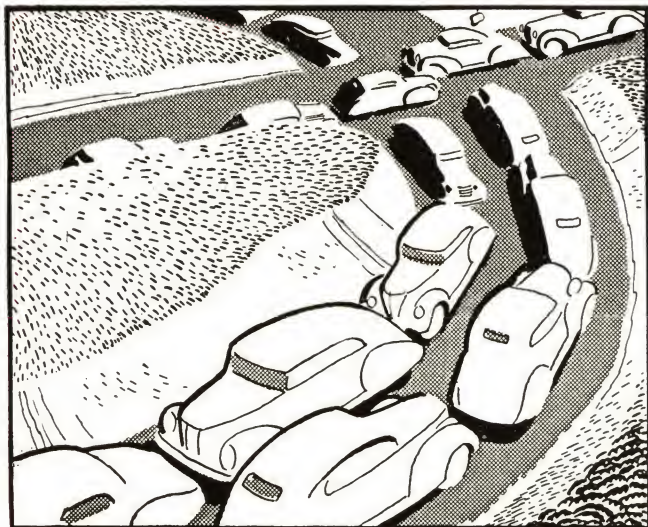
electrical equipment for various types of buildings have been included. While no claim is made for their completeness, it is hoped that they will serve to remind the architect of equipment that might profitably be used and to guide him to the exact source where he can obtain whatever additional information he needs. Similarly, the wiring layouts, while necessarily general in scope, indicate the location and type of equipment that should be used.

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PROPER PLANNING AVOIDS ELECTRICAL TRAFFIC JAMS



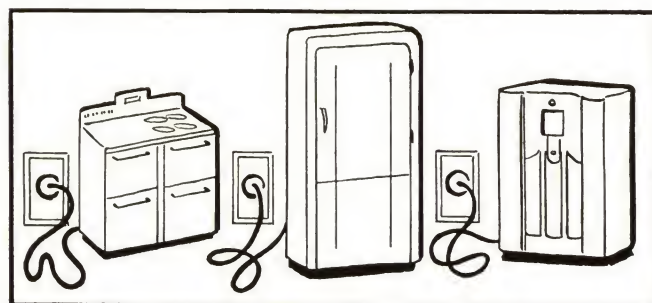
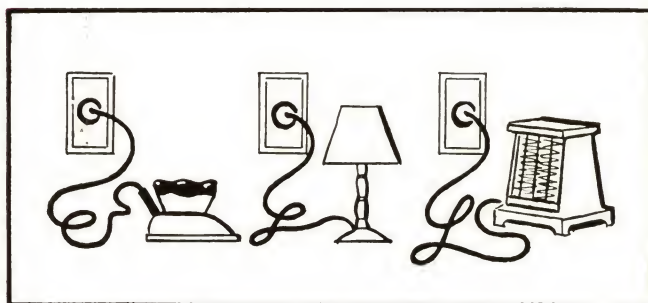
Everyone has had the experience of being caught in a traffic jam. Usually this occurs on a street or road built for traffic conditions of ten, fifteen or twenty years ago. Today, far-seeing road planners are designing roads that will take care of anticipated traffic conditions of future years. The two-lane horse and buggy roads are giving way to four, six and eight-lane concrete highways that will accommodate all types of vehicles.

Everyone that drives is conscious of inadequate, crowded highways. Yet, few recognize that most of the electrical highways in homes, public and commercial buildings are even more inadequate, even more crowded. Great as has been the increase in motor traffic in the past ten or fifteen

years, electrical traffic has increased much more. For example, in 1926 the average home used 428 kilowatt hours per hour. In 1937, this consumption had risen to 793 kilowatt hours, an increase of 85 per cent.

There is every reason to expect as great an increase during the next decade, due to the impetus given the sales of heavy-duty appliances.

As indicated in the table below, the 1937 volume of electric ranges is almost four times that of '26 while in the same period electric water heater sales have risen 900%. This does not take into account electric ironers, roasters, air conditioning and similar equipment which requires heavier wiring for best operation. It is cheaper



SALES OF MAJOR DOMESTIC ELECTRIC APPLIANCES

(Date Covers Number of Sales in Thousands for All Outlets)

1926-1937

Year	Flat Irons	Vacuum Cleaners	Elec. Washing Machines	Radio Sets	Elec. Ranges	Elec. Refrigs.	Elec. Clocks	Oil Burners	Wtr. Htrs.
Sales by Years									
1937	4,040	1,313	1,480	7,631	405	2,369	3,000	224	115
1936	3,765	1,150	1,525	8,825	318	2,080	3,000	225	104
1935	3,700	906	1,229	6,107	215	1,590	9,300	165	70
1934	4,000	722	1,121	4,084	123	1,373	2,100	103	32
1933	2,430	548	967	3,806	50	1,065	2,000	85	13
1932	1,850	447	570	2,620	60	770	2,400	78	14
1931	2,150	687	812	3,420	115	949	2,800	95	23
1930	2,363	960	809	3,828	180	850	1,400	119	27
1929	3,150	1,253	956	4,438	153	840	400	120	25
1928	3,000	1,219	810	3,281	135	560	130	111	20
1927	3,000	1,195	776	1,350	103	390	95	81	15
1926	3,000	1,065	844	1,750	110	210	90	75	...



to foresee this demand and provide for it now than to rewire or provide additional or heavier capacity circuits a few years from now.

This is true for all types of buildings. Safety, economy, and dependability of service, dictate the advisability of originally planning for whatever type of electrical equipment may subsequently be installed.



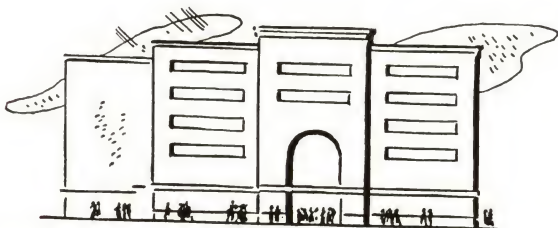
IN HOMES, electric refrigerators, ranges and water heaters require heavy-duty circuits. Table appliances may be used in any room and should not be carried on lighting circuits. Automatic heating needs electrical provisions for controls, blowers, fans, etc. And so it is throughout every room in the house.



SCHOOLS AND OFFICES require provision for increase of lighting intensities—as well as public address systems, intercommunicating systems, fire alarms, radios, water cooling, motion picture and other modern equipment. Rapid increase in use of electric office devices such as adding and dictating machines, typewriters, etc., indicate the necessity of original planning of circuits to carry this traffic.



THEATRES, CHURCHES, AUDITORIUMS and similar structures are more and more meeting the public's demands for comfort and convenience and safety. Main and auxiliary lighting circuits, fire alarms and exit lights, front and back stage communication, radios, public address systems, elevators, water coolers, air conditioning, etc., all require careful electrical planning.

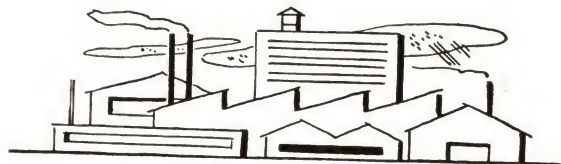


RETAIL STORES—General illumination, and lighting for windows, cases, and special displays require adequate wiring provisions. Stores selling electrical merchandise, or other products requiring lighting or power, need plenty of convenience outlets. Branch circuits for light and heavy loads, included in original design, allow flexibility in location of equipment and merchandise. Air conditioning, water coolers, and other convenience or comfort features should be foreseen. Office space will need provision for appliances, fans, supplementary lighting, etc.

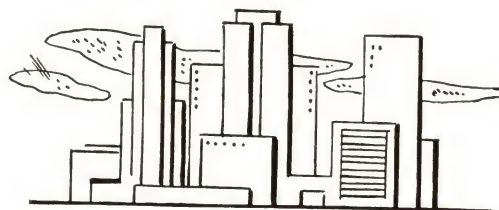


APARTMENTS AND HOSPITALS—Requirements of individual apartments parallel residence needs, with branch circuits, plenty of convenience outlets, and lines for heavy duty equipment such as ranges, air conditioners, refrigerators, etc. Especially important are conveniently located circuit protective devices. Separate circuits for public rooms and halls, and for fire exits, are recommended.

Hospital rooms need many convenience outlets—while for classrooms and auditoriums facilities for public address systems and motion picture equipment are indicated. Built-in radio power circuits, aerials and grounds are always desirable. Diet kitchens as well as main kitchens require refrigeration and range circuits. Lighting circuits are especially important, with adequate protection against excessive concentration on individual circuits. Provision for X-ray and other electrotherapeutic equipment should be adequate.



INDUSTRIAL BUILDINGS—Regardless of type of industry involved, certain fundamentals call for attention in electrical design of industrial buildings. Lighting circuits for working areas, office space, hallways, lavatories; appliance outlets in offices; air conditioning and water cooling requirements; cooking, water heating, and refrigeration for restaurants and cafeterias. While rewiring is usually less expensive in industrial plants than in most types of buildings, it is still sound economy to plan well in advance to take care of future requirements.



IN EVERY BUILDING—Every building, from small residence to huge manufacturing plant, has its own specific problem. In laying out wiring for all of these, certain fundamentals are important, such as:

1. Large enough wire to carry greatest anticipated future load.
2. Branch circuits to prevent overloading, with subsequent breakdown; and at least two circuits per room to prevent too wide-spread interruption of service.
3. Circuit protective devices to meet emergencies, and to enable quick restoration of power after service interruptions.
4. Sufficient outlets to provide flexibility in arrangement of furniture, lamps, etc.
5. Wall switches at convenient locations to provide a ready means of turning lights "on" and "off" without groping in the dark.

In other words, provide enough traffic lanes to carry the load; design them according to the type of load; install circuit protective devices to police them; and make it easy to restore service after "traffic jams" or other accidents.



RESIDENTIAL ELECTRIC PLANNING

Should Anticipate Future Requirements



To enjoy modern electrical conveniences, today, in many homes built a decade or less ago, often requires expensive revisions of electrical circuits, which might have been prevented by planning adequately when the house was built.

Houses being built today should anticipate future needs—by providing ample "Electric highways" to carry future as well as today's traffic. Installation of adequate wiring when the house is being built costs little more than "minimum" requirements—while to replace it or add to it in the future means greatly increased expense and inconvenience.

WIRE SIZES

Best practice recommends 3-wire circuits throughout the home, with wire sizes adequate to carry the maximum possible load on any circuit. Convenience outlets and lighting circuits should be served by No. 12 wire. The following table shows standard recommendations for Service Entrance, which are condensed from "The Handbook of Wiring Design."

Floor Area of Dwelling, Sq. Ft.	Number of Rooms	Size of Service Conductors Gauge No.	Main Circuit Bkr. Capacity
Up to 1,000	4	6	50 amperes
1,000-1,500	5	4	70 amperes
1,500-3,000	6-9	4	70 amperes
3,000-4,000	10-13	2	90 amperes

LOAD CENTERS

Provision should be made for suitable load centers, preferably of the "Nofuze" type. Lighting outlets in rooms with more than one entrance should have 3-way or 4-way switches, for safety and convenience.

PROVIDE SPACE AND OUTLETS FOR FUTURE NEEDS

Adequate wiring having been provided, floor plans should permit installation of such major appliances as

washers, ironers, refrigerators, ranges, water heaters, air conditioners at the most advantageous locations. Even though all of these may not be installed when the home is being built, there is always the possibility that they will be added later if adequate and convenient space is provided.

KITCHEN AND LAUNDRY PLANNING

The new or modernized residence falls short of complete comfort and convenience if it does not include a planned kitchen and laundry.

The kitchen should be of sufficient size to provide adequate storage space, based on number of bedrooms in the house. Refrigerator size is of vital importance, wrong specifications resulting in dissatisfaction with produce. Equally important are proper organization and placement of the three work centers. A too-small, or misplaced work center can ruin an otherwise perfect kitchen.

Likewise, laundry planning is something to consider before building or modernizing. The clothes chute, for example, should end very near the stationary tubs, with room between chute terminal and tubs for a sorting table. Unless this is done, the housewife tramps needless miles every year. In other words, the laundry should be planned as a compact, convenient workroom, instead of a mere locating of stationary tubs.

The Westinghouse Home Planning Department, staffed by registered architects, has specialized on the planning of kitchens and laundries because of a desire to enable users to get the greatest possible enjoyment and use from Westinghouse appliances. Principles of planning have been developed by using the entire country as a proving ground. More than 5,000 homes have been carefully studied.

The results of this specialized research are available to architects in the form of definite principles which can be readily applied both in new construction and in modernizing. Basic principles of kitchen planning are explained on pages 28 and 29. Laundry planning principles are set forth on page 35. The Westinghouse Home Planning Department invites architects to make full use of these principles and plans. The department is always available in a consulting capacity on this type of planning. Address inquiries to Westinghouse Electric & Mfg. Co., Home Planning Dept., Mansfield, Ohio.

CONVENIENCE OUTLETS

Convenience outlets should provide for the use of floor and table lamps and table appliances, the latter even in living rooms and bedrooms. Electric clocks, radios, toasters, waffle irons, coffee makers and other appliances are apt to be used almost anywhere in the house, and circuits and outlets should be provided, separate from lighting circuits.

The table on the next page may be used as a guide for laying out both wiring and outlets; the list of domestic electric servants, cross-referenced to the product pages, will enable the planner to check his plans to see that all or most of these much used items are taken into account, either for immediate or for future use.



RESIDENTIAL WIRING AND CIRCUIT GUIDE

Rooms	Outlets	Control	Use and Remarks
Front Entrance	Ceiling or wall, outside Convenience	Switch inside Switch inside	For general illumination For decorative lighting
Side and rear doors	Ceiling or wall, outside	Switch inside	For general illumination
Covered porches	Ceiling Convenience—1 for each 100 sq. ft.	Switch inside Master switch inside	For general illumination Lamps, radios, appliances, etc.
Porches, terraces and patios	Convenience, each 15 ft. of wall	Switch inside	Lamps, radios, appliances, etc.
Halls and stairways	One ceiling or wall outlet One outlet for each 15 ft. of wall	3-Way switch Switch	To illuminate head or foot of staircase Supplementary illumination
Living rooms, bedrooms, reception hall, library, sun room, enclosed porches, recreation rooms, etc.	One ceiling outlet in each room Wall outlets as desired Convenience—not more than 12 ft. apart and in every usable wall space 3 ft. or more in length	Switch, with multiple control if doorways more than 10 ft. apart Wall Switch	For general illumination Supplementary illumination For lamps, radios, appliances, etc.
Dining room, dinette, breakfast room or nook, etc.	Ceiling Wall Convenience—at least two for each 100 sq. ft. located at least one in each wall	3-Way switch	For general illumination For decorative or supplementary illumination For table appliances
Kitchen, kitchenette, and pantry	Ceiling Supplementary outlets at range, sink, etc. Convenience outlets at every work surface Outlets	Switch	For general illumination For direct illumination For appliances, mixers, etc. Individual circuits for refrigerator, dishwasher, range For refrigerator, range, dishwasher, clock, ventilating fan.
Bath rooms and lavatories	Ceiling Wall outlets Ceiling Convenience Convenience	Switch	For general illumination For mirrors For vapor-proof fixtures in completely enclosed shower compartment For electric razor, curling iron, etc. Not adjacent to tub For electric heater
Closets	Ceiling or wall		For illumination for any closet 3 ft. or more deep or more than 10 sq. ft. of floor area
Laundry	Ceiling Ceiling Outlets Convenience	Switch at entrance One combination switch, receptacle, and pilot light for connecting washer or ironer	Over tubs or trays Over ironer or iron board. Separate circuit for iron outlet and waterheater For hot water heater Hotplate, portable clothes dryer, etc.
General basement (If recreation room is provided in basement, see above for requirements)	Ceiling Ceiling Convenience—at least one	Wall switch and pilot light at head of stairs; switch at bottom In front of furnace, at work bench, and in each enclosed space	For illumination For illumination For general use
Unfinished attic	Ceiling Additional outlets for each enclosed space Convenience—at least one	Switch and pilot at foot of stairs	For illumination For illumination
Garage	Ceiling over hood of each car Wall outlet, exterior Convenience—at rear wall at each car location, not less than 4 ft. above floor	Switch at door or other convenient location. In multiple garage, no more than 2 outlets on same switch Multiple control from garage or house	For general use General illumination General illumination General use

SPECIAL CIRCUITS

Range

For ranges up to 8500 watts, three No. 8 wires will be satisfactory if the length of the circuit does not exceed 40 feet. For greater length, the circuit shall be not smaller than two No. 6 and one No. 8 wires and shall be carried to the range location and terminated in the wall or floor in accordance with local regulations.

Heaters

Water Heater Circuits of at least two No. 10 wires should be carried to suitable locations for each heavy duty heating unit planned for the kitchen, laundry, etc.

Water Pump

Where pressure water service is not available, two No. 12 wires should be carried to the pump location.

Oil Burner or Stoker

If an oil burner or automatic stoker is to be installed, a circuit consisting of two No. 12 conductors should

Air

Conditioning

be provided. Emergency switch control should be provided at cellar entrance.

Radio

If central air conditioning is planned, the wiring requirements should be based on the particular equipment chosen. Switch control.

At least three outlets with radio antenna and ground connections and power service in each 6 room or smaller house. Proportionately more in larger houses. Most often installed in living room, kitchen, bedrooms, and recreation room.

Telephone

At least one outlet box with concealed wiring on each active floor.

CHECK LIST

See page listed below for detailed information

- | | | |
|--------------------------------------|---|---|
| 1. Entrance Device | 7. Electric Kitchen | (b) Semi-Indirect (Lunaire, Lunalex) |
| (a) Enclosed Breaker .....13 | (a) Ranges .....32 | (c) General Diffusing (Magnalux) |
| (b) Safety Switch .....14 | (b) Refrigerators .....30 | (d) Direct (Flush Mounting Reflectors) (with Louvers, Industrial) |
| (c) Nofuze Load Center .....20 | (c) Dishwashers .....34 | (e) Outdoor (Floodlights, Weather-proof Brackets) |
| (d) Panelboard .....17, 22 | 8. Wiring Devices | |
| 2. Current Transformers .....43 | (a) Wall Switches | 10. Lamps .....42-44 |
| 3. Meter .....43 | (b) Convenience Outlets | 11. Wire and Cable* |
| 4. Air Conditioning .....38 | (c) Clock Outlets | 12. Conduit, BX, etc.* |
| 5. Air Cleaning, Precipitron .....44 | (d) Fan Hangers | 13. Outlet Boxes* |
| 6. Electric Laundry .....35 | 9. Lighting | 14. Radio Equipment* |
| (a) Washer .....35 | (See Section 24 for Westinghouse Lighting Fixtures) | |
| (b) Ironers .....35 | (a) Indirect (Magnalux) | |
| (c) Water Heaters .....33 | | |

*Not manufactured by Westinghouse. See agent-jobber listed on pages 46 and 47 for more information.

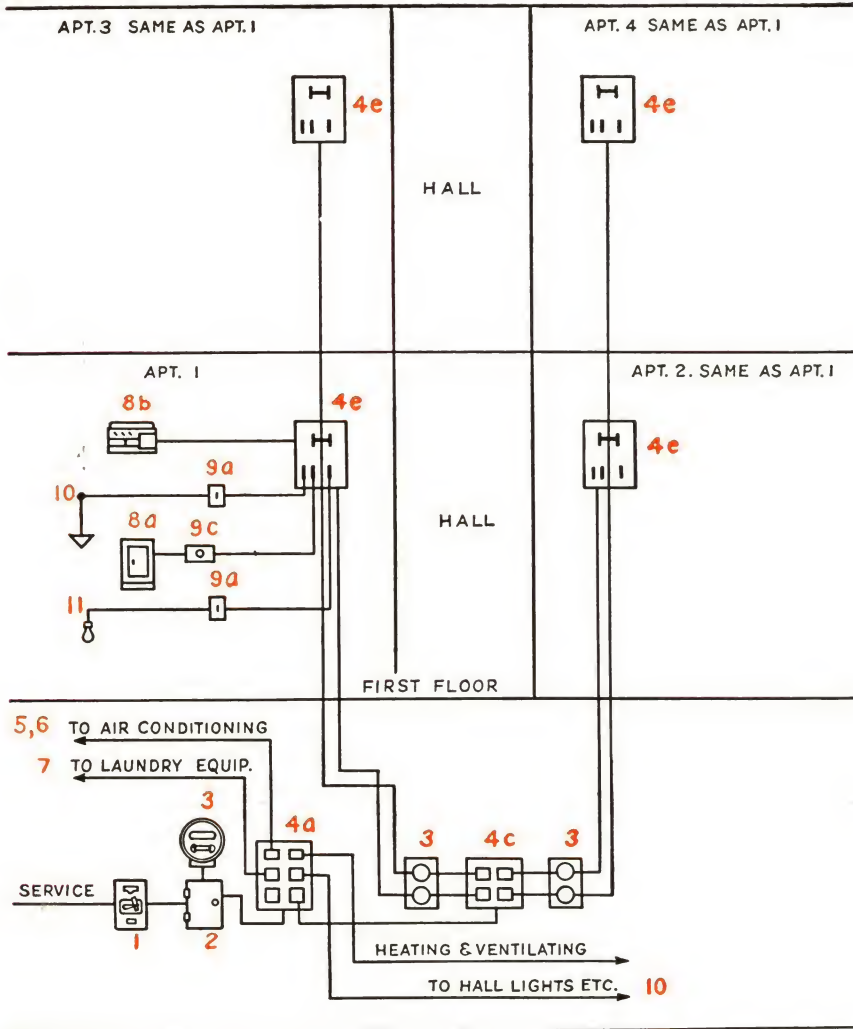


APARTMENTS AND APARTMENT HOTELS



APT. 3 SAME AS APT. 1

APT. 4 SAME AS APT. 1



CHECK LIST

For details
see page

PRODUCT

1. Entrance Equipment
 - (a) Switchboard43
 - (b) Enclosed Breaker13
 - (c) Safety Switch14
 - (d) Power Panelboard16
 - (e) Cubicles43
 - (f) Metal Clad Switchgear.....43
2. Current Transformer43
3. Meter43
4. Panelboards
 - (a) Main Distribution16
 - (b) Lighting16
 - (c) Sub-Distribution16
 - (d) Multi-Breaker22
 - (e) Load Center20
5. Air Conditioning36
6. Air Cleaning, Precipitron44
7. Laundry Equipment
 - (a) Washers35
 - (b) Ironers35
8. Electric Kitchens28
 - (a) Refrigerators30
 - (b) Ranges32
 - (c) Dishwashers34
9. Wiring Devices

(See Section 23 for Bryant Electric Co. pages)

 - (a) Wall Switches
 - (b) Door Switches
 - (c) Convenience Outlets
 - (d) Clock Outlets
 - (e) Fan Hangers
 - (f) Radio Outlets
10. Lighting

(See Section 24 for Westinghouse Lighting Fixtures)

 - (a) Indirect (Magnaflux)
 - (b) Semi-Indirect (Lunaire, Lunaflux)
 - (c) General Diffusing (Sollaire, Sollux, Magnalaire, Sollite)
 - (d) Direct (Flush Mounting Reflectors with Louvers, Industrial)
 - (e) Outdoor (Floodlights, Weatherproof Brackets)
11. Lamps40
12. Water Coolers39
13. Stokers44
14. Capacitors27
15. Motors and Control24
16. Elevators44
17. Wire and Cable.....*
18. Conduit, BX, etc.....*
19. Outlet Boxes*
20. Annunciator Systems.....*
21. Fire Alarm Systems.....*
22. Emergency Lighting*
23. Telephone Systems*
23. Radio Equipment*

* Not manufactured by Westinghouse. See Westinghouse agent-jobber listed on pages 46 and 47 for more information.

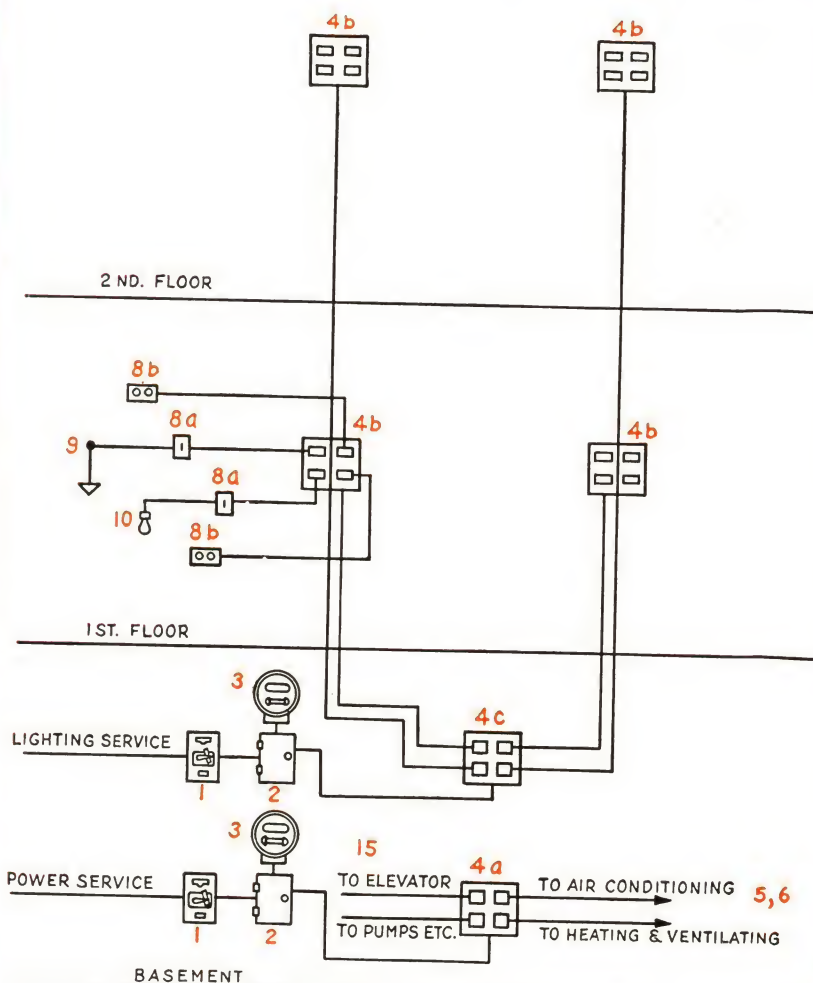


HOTELS, HOSPITALS, CLUBS AND SCHOOLS

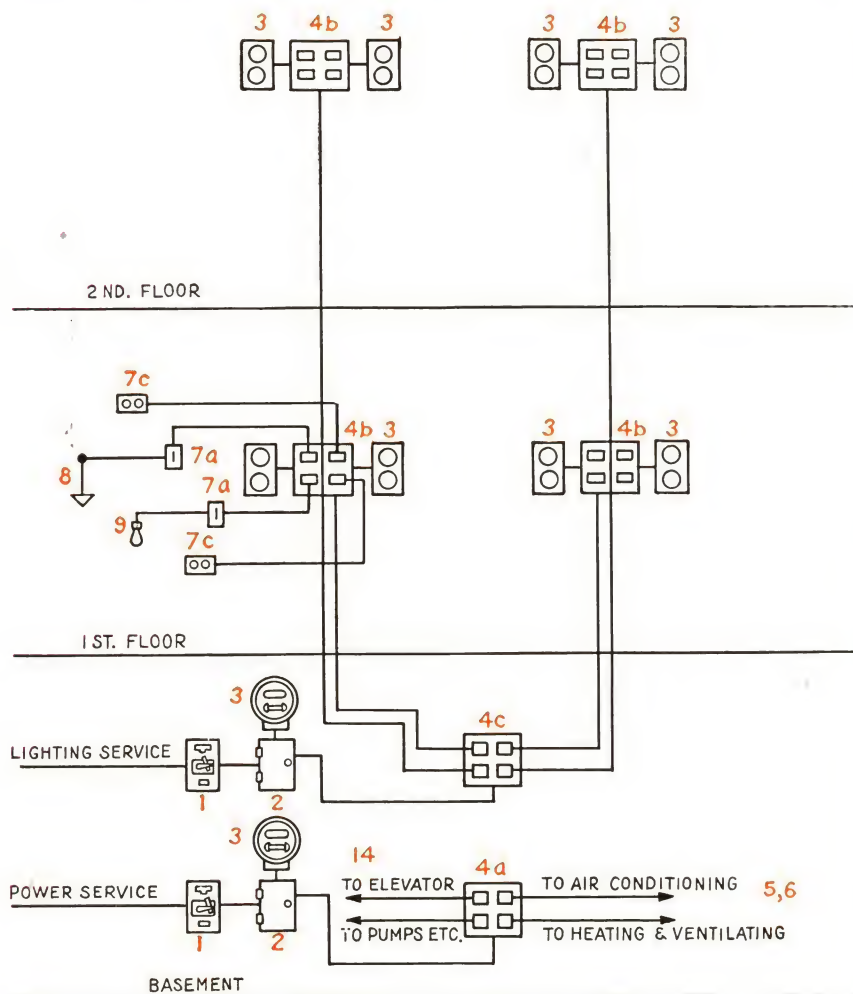
CHECK LIST

PRODUCT	Hotels	Hospitals	Clubs	Schools	For details see page
1. Entrance Equipment					
(a) Switchboard	x	x	x	x	43
(b) Enclosed Breaker	x	x	x	x	13
(c) Safety Switch	x	x	x	x	14
(d) Power Panelboard	x	x	x	x	16
(e) Cubicles	x	x	x	x	43
(f) Metal Clad Switchgear	x	x	x	x	43
2. Current Transformer	x	x	x	x	43
3. Meter	x	x	x	x	43
4. Panelboards					
(a) Main Distribution	x	x	x	x	16
(b) Lighting	x	x	x	x	16
(c) Sub-Distribution	x	x	x	x	16
(d) Multi-Breaker	x	x	x	x	22
(e) Load Center	x	x	x	x	20
5. Air Conditioning	x	x	x	x	36
6. Air Cleaning, Precipitron	x	x	x	x	44
7. Electric Kitchens					28
(a) Refrigerators		x		x	30
(b) Ranges			x	x	32
(c) Dishwashers		x	x		34
(d) Water Heaters		x	x	x	33
8. Wiring Devices					
(See Section 23 for Bryant Electric Co. pages)					
(a) Wall Switches	x	x	x	x	
(b) Door Switches	x	x	x	x	
(c) Convenience Outlets	x	x	x	x	
(d) Clock Outlets	x	x	x	x	
(e) Fan Hangers	x	x	x	x	
(f) Radio Outlets	x	x	x	x	
(g) Signaling Devices		x			
9. Lighting					
(See Section 24 for Westinghouse Lighting Fixtures)					
(a) Indirect (Magnaflux, Silvern, TI, MB, GB)	x	x	x	x	
(b) Semi-Indirect (Lunaire, Luna- lux)	x	x	x	x	
(c) General Diffusing (Sollaire, Sollux, Sollite)	x	x	x	x	
General Diffusing (Magna- laire)	x	x	x		
(d) Direct (Flush Mounting Re- flectors with Louvers)	x		x	x	
Direct (Miscellaneous Indus- trial Apparatus)	x	x		x	
(e) Outdoor (Floodlights, Weath- erproof)	x	x	x	x	
10. Lamps	x	x	x	x	40
11. Water Coolers		x	x	x	39
12. Stokers	x	x	x	x	44
13. Capacitors	x	x	x	x	26
14. Motors and Control	x	x	x	x	24
15. Elevators	x	x	x	x	44
16. X-Ray Equipment		x			44
17. Wire and Cable	x	x	x	x	*
18. Conduit, BX, etc.	x	x	x	x	*
19. Outlet Boxes	x	x	x	x	*
20. Annunciator Systems	x	x	x	x	*
21. Fire Alarm Systems	x	x		x	*
22. Emergency Lighting	x	x	x	x	*
23. Telephone Systems	x	x	x	x	*
24. Master Clock and Program System				x	*
25. Duct System	x	x	x	x	*

* Not manufactured by Westinghouse. See agent-jobber listed on pages 46 and 47 for more information.



OFFICE BUILDINGS



CHECK LIST

For details
see page

PRODUCT

1. Entrance Equipment
 - (a) Switchboard43
 - (b) Enclosed Breaker13
 - (c) Safety Switch14
 - (d) Power Panelboard16
 - (e) Cubicles43
 - (f) Metal Clad Switchgear.....43
2. Current Transformer.....43
3. Meter43
4. Panelboards
 - (a) Main Distribution16
 - (b) Metering†
 - (c) Sub-Distribution16
 - (d) Lighting16
 - (e) Multi-Breaker22
 - (f) Load Center20
5. Air Conditioning36
6. Air Cleaning, Precipitron.....44
7. Wiring Devices

(See Section 23 for Bryant Electric Co. pages)

 - (a) Wall Switches
 - (b) Door Switches
 - (c) Convenience Outlets
 - (d) Clock Outlets
 - (e) Fan Hangers
8. Lighting

(See Section 24 for Westinghouse Lighting Fixtures)

 - (a) Indirect (Magnalux, Silvern, TI, MB, GB)
 - (b) Semi-Indirect (Lunaire, Lunalex)
 - (c) General Diffusing (Sollaire, Sollux, Sollite)
 - (d) Outdoor (Weatherproof Brackets)
9. Lamps40
10. Water Coolers39
11. Stokers44
12. Capacitors27
13. Motors and Control.....24
14. Elevators44
15. Wire and Cable.....*
16. Conduit, BX, etc.....*
17. Outlet Boxes*
18. Annunciator Systems*
19. Fire Alarm Systems.....*
20. Emergency Lighting*
21. Telephone Systems*
22. Duct Systems*

* Not manufactured by Westinghouse. See agent-jobber listed on pages 46 and 47 for more information.

† See Westinghouse office.

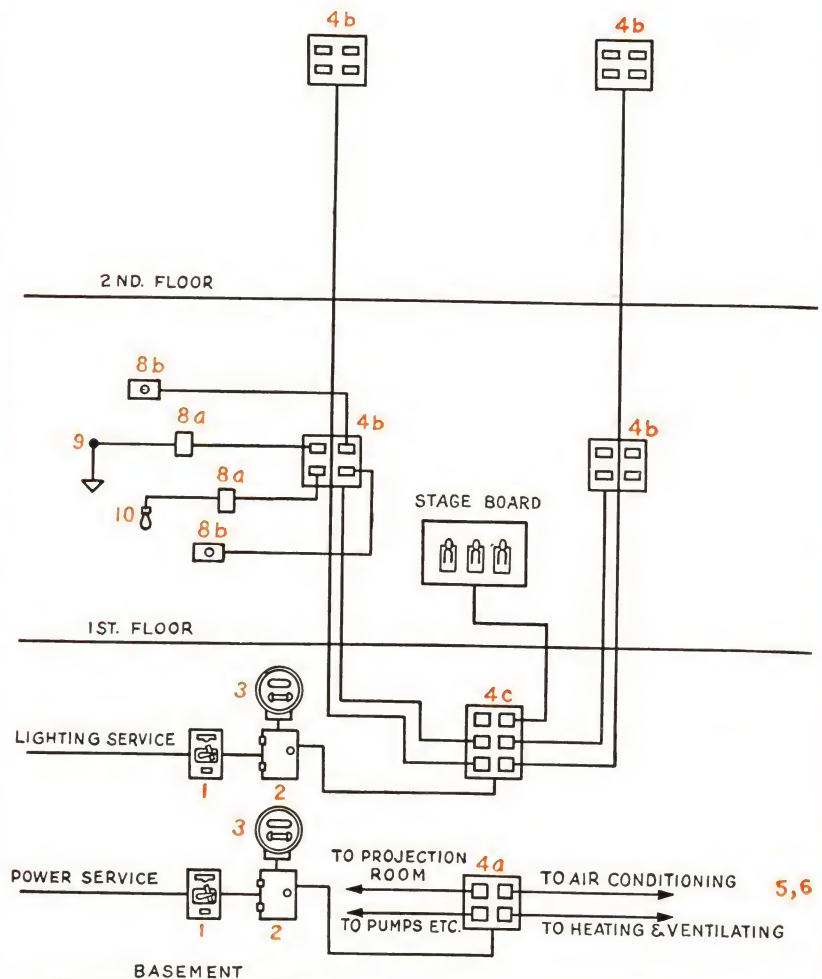


THEATRES, CHURCHES AND AUDITORIUMS

CHECK LIST

PRODUCT	Theatres	Auditoriums	Churches	For details see page
1. Entrance Equipment				
(a) Switchboard	x	x	x	43
(b) Enclosed Breaker	x	x	x	13
(c) Safety Switch	x	x	x	14
(d) Power Panelboard	x	x	x	16
(e) Cubicle	x	x	x	43
(f) Metal Clad Switchgear	x	x	x	43
2. Current Transformer	x	x	x	43
3. Meter	x	x	x	43
4. Panelboards				
(a) Main Distribution	x	x	x	16
(b) Lighting	x	x	x	16
(c) Sub-Distribution	x	x	x	16
(d) Multi-Breaker	x	x	x	22
(e) Load Center	x	x	x	20
5. Air Conditioning	x	x	x	36
6. Air Cleaning, Precipitron	x	x	x	44
7. Electric Kitchens				28
(a) Refrigerators			x	30
(b) Ranges		x	x	32
(c) Water Heaters			x	33
8. Wiring Devices				
(See Section 23 for Bryant Electric Co. pages)				
(a) Wall Switches	x	x	x	
(b) Convenience Outlets	x	x	x	
(c) Clock Outlets	x	x	x	
(d) Fan Hangers	x	x	x	
9. Lighting				
(See Section 24 for Westinghouse Lighting Fixtures)				
(a) Indirect (Magnaflux, Metal Bipost, Glass Bipost)	x	x	x	
Indirect (Silvurn, TI)		x	x	
(b) Semi-Indirect (Lunaire, Luna-lux)			x	
(c) General Diffusing (Sollaire, Sollux, Magnalaire, Sollite)			x	
(d) Direct (Flush Mounting Reflectors with Louvers)	x	x		
Direct (Miscellaneous Industrial)	x			
(e) Outdoor (Floodlights)	x		x	
Outdoor (Weatherproof Brackets)	x	x	x	
10. Lamps	x	x	x	40
11. Water Coolers	x	x	x	39
12. Stokers	x	x		39
13. Capacitors	x	x	x	26
14. Motors and Control	x	x	x	24
15. Wire and Cable	x	x	x	*
16. Conduit, BX, etc.	x	x	x	*
17. Outlet Boxes	x	x	x	*
18. Annunciator Systems	x	x	x	*
19. Fire Alarm Systems	x	x	x	*
20. Emergency Lighting	x	x	x	*
21. Telephone Systems	x	x	x	*
22. Public Address System		x		*
23. Duct Systems	x	x	x	*

* Not manufactured by Westinghouse. See agent-jobber listed on pages 46 and 47 for detailed information.



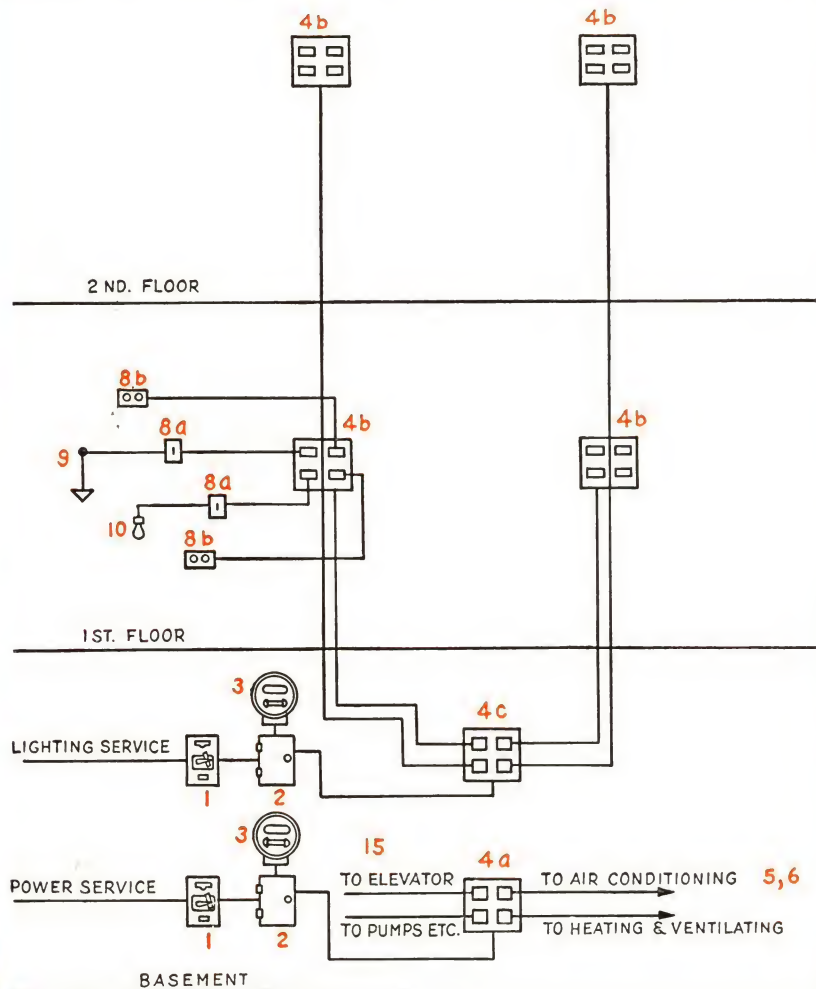
STORES AND RESTAURANTS



CHECK LIST

PRODUCT	Stores	Restaurants	For details see page
1. Entrance Equipment			
(a) Switchboard	x	x	43
(b) Enclosed Breaker	x	x	13
(c) Safety Switch	x	x	14
(d) Power Panelboard	x	x	16
(e) Cubicles	x	x	43
(f) Metal Clad Switchgear	x	x	43
2. Current Transformer	x	x	43
3. Meter	x	x	43
4. Panelboards			
(a) Main Distribution	x	x	16
(b) Lighting	x	x	16
(c) Sub-Distribution	x	x	16
(d) Multi-Breaker	x	x	22
(e) Load Center	x	x	20
5. Air Conditioning	x	x	36
6. Air Cleaning, Precipitron	x	x	44
7. Electric Kitchen			28
(a) Refrigerator		x	30
(b) Range	x		32
8. Wiring Devices			
(See Section 23 for Bryant Electric Co. pages)			
(a) Wall Switches	x	x	
(b) Convenience Outlets	x	x	
(c) Clock Outlets	x	x	
(d) Fan Hangers	x	x	
(e) Radio Outlets	x	x	
9. Lighting			
(See Section 24 for Westinghouse Lighting Fixtures)			
(a) Indirect (Magnaflux, Silvern, TI, MB, GB)	x	x	
(b) Semi-Indirect (Lunaire, Lunaflux)	x	x	
(c) General Diffusing (Sollaire, Sollux, Sollite, Magnalaire) ..	x		
(d) Semi-Direct (Storlite)	x		
(e) Direct (Flush Mounting Reflectors with Louvers, Miscellaneous Industrial Apparatus) ..	x	x	
(f) Outdoor (Weatherproof Brackets)	x	x	
10. Lamps	x	x	40
11. Water Coolers	x	x	39
12. Stokers	x		44
13. Capacitors	x	x	26
14. Motors and Control	x	x	21
15. Elevators	x		44
16. Wire and Cable	x	x	*
17. Conduit, BX, etc.	x	x	*
18. Outlet Boxes	x	x	*
19. Fire Alarm Systems	x		*
20. Emergency Lighting	x		*
21. Telephone System	x		*
22. Duct System			*

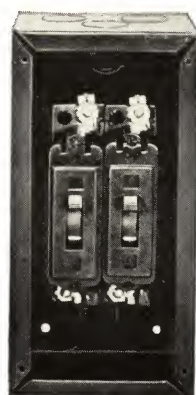
* Not manufactured by Westinghouse. See agent-jobber listed on pages 46 and 47 for more information.



ENCLOSED "DE-ION" NOFUZE CIRCUIT BREAKERS TYPE ABI



TYPE ABI 100 AMP. INDUSTRIAL BREAKER. SURFACE-MOUNTING DUST-RESISTING ENCLOSURE. 250 VOLTS D.C., 600 VOLTS A.C. MAX.



ABI LIGHT DUTY BREAKER WITH COVER REMOVED, 125/250 VOLTS



TYPE ABI BREAKER IN CAST ALUMINUM WEATHER-RESISTING ENCLOSURE, 250 VOLTS D.C., 600 VOLTS A.C. MAX.



EXPLOSION-RESISTING 50 AMPERE, TYPE ABI "NOFUZE" BREAKER, 250 VOLTS D.C., 600 VOLTS A.C. MAX.

APPLICATION

ABI Circuit Breakers are ideally adapted for the protection of electrical circuits. Ratings are available in single, double and triple pole from 15 amperes up to 50 amperes, 125/250 volts a-c. or d-c.; 15 amperes up to and including 600 amperes,

2 and 3 pole rated 230 volts a-c., 125/250 volts d-c., 250 volts d-c. and 600 volts a-c. Enclosures for practically all applications are available; sheet steel, sheet steel dust-resisting, cast iron or aluminum weather-proof and explosion-proof.

FEATURES

FUSELESS CIRCUIT PROTECTION. Operation is of the thermal principle and tripping is accomplished by bi-metals. There are no elements to renew after circuit interruption.

TIME DELAY TRIPPING. The inverse-time-limit feature of the bi-metallic trip elements prevent unnecessary tripping on

momentary overloads, but provides instantaneous tripping on heavy short circuits.

TRIP FREE HANDLE. It is impossible to hold the circuit breaker closed against abnormal overloads or short circuits.

TAMPER PROOF. The tripping mechanisms are sealed to prevent unauthorized changing of calibration.

HOW TO SELECT

Breakers are calibrated to conform to commercial wire sizes. The Proper breaker should be selected from the table on page 23.

1—If circuits feed motors, select rating of branch circuit breaker from Westinghouse Application Data 29-500.

DIMENSIONS AND RATINGS

See Westinghouse Catalog 29-500.

TYPICAL SPECIFICATIONS

Enclosed circuit breakers shall be of the De-ion thermal type either 2 or 3 pole, 250 volts, d-c. or 600 volts, a-c. with trip elements calibrated from 15 to 600 amperes as indicated on the plans or specified herein.

THE ENCLOSURE shall be constructed of code gauge steel protected with a baked black japan finish, Cast Aluminum Water and Dust-Tight, Cast Iron Water and Dust-Tight or Cast Iron Explosion Resisting as indicated on plans or specified herein. The enclosure shall have a front-operated handle with a bracket

that permits the use of three padlocks for locking in the "off" position. The code gauge steel enclosure is to be gasketed to make it dust-resisting and the cover interlocked so that it can be opened only when the breaker is in the "off" position.

The enclosure shall be equipped with a 2-way centering cover latch with knockouts for padlocking or sealing the cover in place.

AUTOMATIC CIRCUIT BREAKER (See page 15 Spec. A for detailed circuit breaker specifications.)

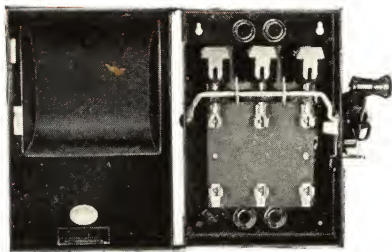
WHERE TO BUY

See your nearest Westinghouse district office or agent jobber. For complete information on ABI circuit breakers request a

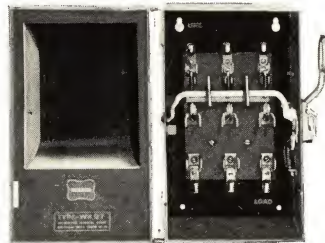
copy of Catalog Section 29-500. Addresses of local offices are given on the back cover.



SAFETY SWITCHES



60 AMP. TYPE A, QUICK-MAKE AND QUICK-BREAK INTERLOCKING SAFETY SWITCH, 575 VOLTS, EQUIPPED WITH DE-ION ARC QUENCHERS



60 AMP. TYPE C, QUICK-MAKE AND QUICK-BREAK SAFETY SWITCH, 250 VOLTS



100 AMPERE TYPE D SLOW MAKE, QUICK BREAK SAFETY SWITCH, 250 VOLTS

APPLICATION

Used for service entrance and the protection of motor and feeder circuits. Available in standard ratings from 30 to 1200

amperes (NEMA sizes), 125/250 volts a-c. or d-c., to 600 volts d-c., 575 volts a-c. fusible and non-fusible.

FEATURES

DIAMOND POINTED BREAK JAW and EXTENDED BLADE construction, used on all switches, carries the arcing outside the contact area.

FRONT REMOVABLE one-piece copper parts are used.

"DE-ION" ARC QUENCHER. The Westinghouse "De-ion"

arc quencher is used on all 575 and 600 volt switches. It consists of a series of cadmium plated, slotted steel plates so mounted that the blades of the switch must pass through the slot when the switches are being opened. The arc is divided, cooled and deionized by these plates, causing it to be extinguished instantly.

HOW TO SELECT

Type A switches are quick make and quick break with interlocked door; Type C switches are quick make and quick break;

Type D are quick break. A switch of the rating desired and type required by the application should be selected.

DIMENSIONS

See Westinghouse Catalog 29-500.

TYPICAL SPECIFICATIONS

Safety switches shall be of type (A), (C), (D) construction, and shall be fusible or non-fusible as required with ratings as indicated on the plans or as specified herein.

Type "A" Switches shall be Westinghouse or equivalent, externally operated with a quick make and quick break mechanism, and shall be provided with a mechanical interlock to prevent the door being opened unless switch is in the "off" position.

Type "C" Switches shall be Westinghouse or equivalent, externally operated with a quick make and quick break mechanism.

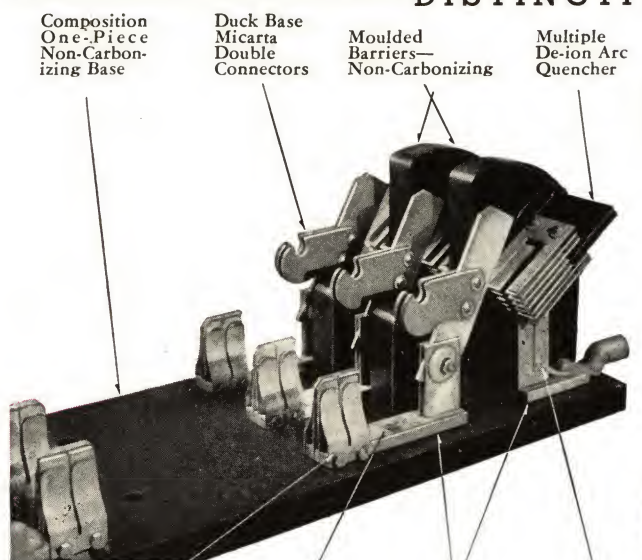
Type "D" Switches shall be Westinghouse or equivalent, externally operated with a quick break mechanism.

All Safety Switches shall conform with the requirements and have the approval of Underwriters' Laboratories, Inc.

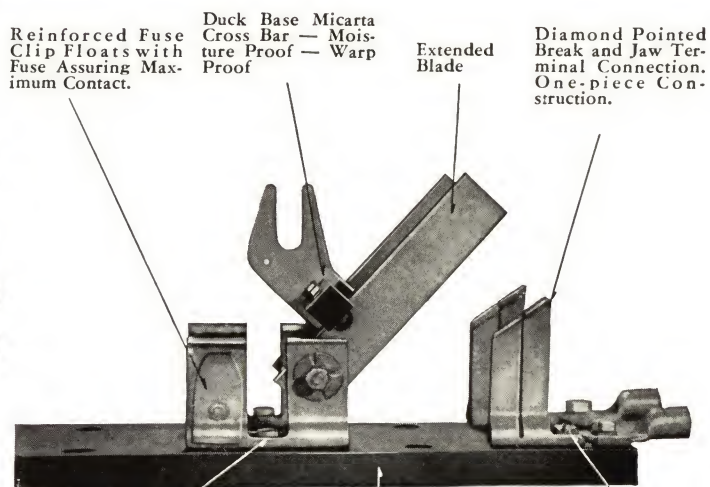
WHERE TO BUY

See your nearest Westinghouse Agent Jobber listed on back cover. For complete information request catalog 29-500.

DISTINCTIVE FEATURES



Reinforced, Self-Aligning Fuse Clips
Sub Feed Connection
Milled and Ground Copper
Diamond Pointed Break Jaws
BASE ASSEMBLY FOR TYPE A SWITCH, 400 AMPERES, 575 VOLTS



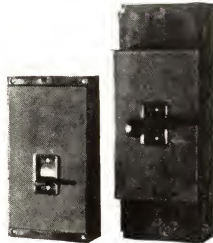
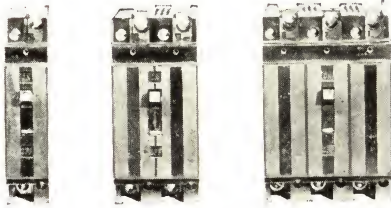
Reinforced Fuse Clip Floats with Fuse Assuring Maximum Contact
Duck Base Micarta Cross Bar — Moisture Proof — Warp Proof
Extended Blade
Diamond Pointed Break and Jaw Terminal Connection. One-piece Construction.
Front Removable One-Piece Hinge Jaw and Fuse Clip Held by One Bolt and Two Bosses
Composition One-Piece Non-Carbonizing Base
Front Removable Break Jaw Held by One Bolt and Two Bosses
BASE ASSEMBLY FOR TYPE A SWITCH, 100 AMPERES 250 VOLTS



TYPICAL SPECIFICATIONS FOR AUTOMATIC CIRCUIT BREAKERS

TYPICAL SPECIFICATION A

De-ion Circuit Breakers 600 Amperes and Below



"AB" DE-ION SWITCHBOARD AND
PANELBOARD BREAKERS 600 AMPERES
AND BELOW

Except for circuit breakers in lighting panelboard branch circuits which shall be single pole calibrated at 15 ampere, automatic circuit breakers shall be 2 pole or 3 pole, with trip elements calibrated for 15 to 600 amperes, in wire size capacities as shown on plans. Multi-pole breakers shall be so designed that all poles will break simultaneously and all poles shall be effectively barred from one another. All breakers shall be approved by the Underwriters for at least 250 volt a-c. per pole.

Breakers of 50 ampere frame capacity or less shall be unit type with permanent trip elements. Breakers of 70 to 600 ampere capacity shall have removable trip elements for ready interchangeability.

Pole spacing on all 50-A frame breakers shall be uniform. Pole spacing on 100 to 600 ampere frames shall be uniform and twice that of the 50 ampere frame.

Automatic tripping of 50 ampere frame breakers is to be secured by means of a bimetallic thermal element on each pole engaging a common trip. All breakers above the 50 ampere frame size shall have a similar trip arrangement supplemented by an instantaneous trip on current values not less than 5 times normal and above. The trip of elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.

The individual tripping elements shall be enclosed and sealed in units of approved molded composition to eliminate tampering or unauthorized changes in calibration.

The circuit breakers shall have inverse-time-limit characteristics, so that tripping will be prevented on momentary overloads but will occur before dangerous values are reached.

The breakers shall be operable in any position and removable from the front of panelboard without disturbing adjacent units.

The mechanism shall trip free from the handle so that contacts cannot be held closed against short circuit or abnormal overloads.

The breaker shall have a quick make and quick-break toggle mechanism whether actuated automatically or manually. Contacts shall be non-welding under operating conditions. The stationary contacts shall be an integral part of the breakers.

Automatic tripping shall be positively indicated from the manual "on" and "off" by the position of the handle.

Current-carrying parts, except thermal elements, if of copper or copper alloy, shall not rise in temperature in excess of 30 deg. C. while carrying rated current at rated frequency.

All individual breakers shall bear the Underwriters' Laboratories Inspection Label.

TYPICAL SPECIFICATION B

Air Circuit Breakers Above 600 Amperes*

Air Circuit Breakers shall be rated (select rating).

480 volts a-c. or 250 volts d-c. without Barriers

650 volts a-c. or 750 volts d-c. with Barriers

Breakers shall have interrupting capacities of: (specify)

20,000 amps. 40,000 amps. 60,000 amps. 80,000 amps.

Amp. capacities and number of poles shall be as indicated on the drawings or as specified herein.

Silver shall be furnished on the main contact surfaces. All main conductors shall be of high conductivity copper. Arcing and auxiliary contacts shall provide adequate protection to the main contacts when opening current.

The breakers shall be of the type known as "trip free" which cannot be held closed on overload. The latch tripping device shall have a preliminary movement so that the tripping point will be independent of latch friction.

All breaker parts shall be easily accessible for inspection and repairs. The breaker frame will be of sturdy construction, yet provide accessibility to both the upper and lower main contacts, and working parts. Means shall be provided for reducing the shock incident to breaker opening and also for preventing excessive rebound of the mechanism or contacts, once they have opened.

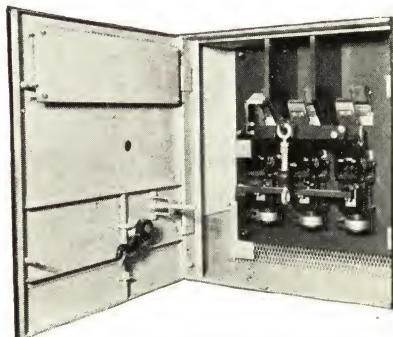
The breaker mechanism shall conform with N.E.M.A. Standards for live frame construction, and shall be furnished with insulated handles. The mechanism shall be so designed that equal pressures will be maintained on both the upper and lower contacts, when the breaker is closed.

Circuit breakers shall be provided with
SELECT REQUIREMENTS Series Overload Trip attachment (1, 2 or 3)
Inverse Time Limit attachment
Shunt Trip attachment (Give control voltage)
Under Voltage attachment
Reverse Current attachment
Auxiliary Switches (A and B stages required)
Bell Alarm Switch
Field Discharge Switch
and arranged for

SELECT DESIRED METHOD OF OPERATION Manual
D-C. Solenoid (..... volts)
A-C. Rectox Solenoid operation

The millivolt drop shall not exceed 4 millivolts across each contact at rated current. No circuit breaker shall exceed a temperature rise of 30° C. on the contacts, when carrying its rated load at 40° C. ambient, in accordance with N.E.M.A. Standards.

*Also available with trip elements calibrated in ratings from 15 amperes up when high interrupting capacity is required.

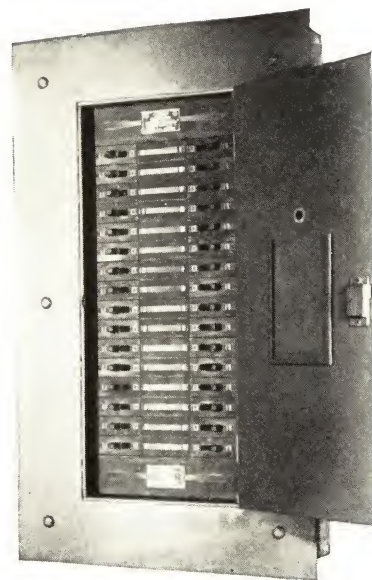


DEAD FRONT SWITCHBOARD
MOUNTED AIR CIRCUIT BREAKER
(COVER DOOR OPEN)

NOFUZE PANELBOARDS



NOFUZE CONVERTIBLE DISTRIBUTION PANELBOARD



LIGHTING BRANCH CIRCUIT PANELBOARD



MODERNISTIC FLUSH TYPE LOCK

APPLICATION

NoFUze panelboards are used for the distribution of secondary electrical energy for power and lighting circuits of 600 volts a-c. or 250 volts d-c. and below with capacities from 15 to 600 amperes, one, two and three poles.

There are three types of NoFUze panelboards (not including the Multi-Breaker Panelboard):

- 1—Convertible distribution panelboards.
- 2—Low capacity distribution panelboards
- 3—Lighting branch circuit panelboards

CONVERTIBLE (OR HIGH CAPACITY PANELBOARDS) are available with two or three pole main and branch breakers in capacities from 15 to 600 amperes.

LOW CAPACITY DISTRIBUTION PANELBOARDS are designed for low capacity power and lighting applications in which the capacity of any branch circuit need not exceed 50 amperes, 230 volts a-c. although one feeder up to 225 ampere capacity may be supplied. Main lugs up to 400 ampere capacity or main breakers up to 225 ampere capacity can be supplied.

NOFUZE LIGHTING BRANCH CIRCUIT BREAKERS are used for protecting and controlling branch lighting circuits. They are available in ratings from 15-50 ampere, 230 volt a-c. or 125 volt d-c. with from 4 to 42 single pole branch breakers and from 4 to 20 two-pole branch breakers, either with or without main breakers.

FEATURES

ELIMINATES FUSES AND SWITCHES—The use of NoFUze "De-ion" circuit breakers in mains and branches gives full circuit protection and makes the use of switches and fuses unnecessary.

ATTRACTIVE APPEARANCE—Cabinet Fronts finished in an attractive olive green Duco. The modernistic chromium plated combination lock and catch, and flush type hinges adds to the finished appearance of the front.

HOW TO SELECT

Before laying out a panel, all circuit capacities must be carefully checked for the following three requirements:

- 1—If circuits feed motors, select rating of branch circuit breaker from Westinghouse Application Data 29-500.
- 2—For all circuits other than motor circuits, it is essential that the branch circuit wire size be known so that a breaker of the proper capacity is used and not one of a capacity larger than the wire size it is protecting. NoFUze De-ion Breakers are rated by ampere capacities corresponding to the current carrying capacity of commercial rubber covered wire. See table, page 23.
- 3—The actual load on the circuit should be given full consideration, so that in case an extra heavy wire is being used to avoid voltage drop, a breaker larger than necessary to carry the load is not used. For instance, a No. 00 (150 ampere) wire

might be used to avoid voltage drop when under ordinary circumstances a No. 1 wire would be satisfactory, since the actual load being carried is not over 100 amperes. In this case a 100-ampere breaker would be satisfactory as it would afford full protection to the wire being used, and at the same be able to carry the load.

LIGHTING BRANCH CIRCUIT PANELBOARDS may be selected from the tables on page 18.

NARROW OR LOW CAPACITY DISTRIBUTION PANELBOARDS may be selected from the tables on page 19.

CONVERTIBLE OR HIGH CAPACITY DISTRIBUTION PANELBOARDS are built to order according to requirements. To determine the layout for specific requirements, it is necessary to determine the number of "X" areas as explained below.

DIMENSIONS

Dimensions for LIGHTING BRANCH CIRCUIT PANELBOARDS and LOW CAPACITY DISTRIBUTION PANELBOARD CABINETS are 20 inches wide, $5\frac{3}{4}$ inches deep and of the height given in the tables on page 18 and page 19.

CONVERTIBLE OR HIGH CAPACITY PANELBOARDS:

Determine the number of "X" areas required for the complete panel, and then the dimensions may be obtained from the tables on page 19.

TO DETERMINE THE NUMBER OF X AREAS—In the construction of the panelboards, three types of sections are employed. These are designated as "A," "B," and "C" sections. The "A" sections ac-

commodate the 50 and 100-ampere frame breakers and have a length equal to one-half the width of the panel (two rows of "A" sections being necessary to make up the complete width). The "B" section extends the full width of the panel and accommodates the 225-ampere frame breaker, as well as the neutral and main lug sections. The "C" sections are 2 inches longer (the horizontal dimension when assembled) than the "B" sections, but otherwise are the same and accommodate the 400 and 600-ampere frame breakers. All sections, however, can be assembled in the same panel.

In order to facilitate laying out the panel, it has been split up into units of area called "X" which are one-half the panel width



and $1\frac{3}{8}$ inches high. Each branch circuit, or frame size, is a multiple of "X" units. Diagram shows the correct number of "X" units per section or frame size. For instance, a 3-pole, 100 ampere frame breaker requires a space of 6X. This being an "A" section means that it occupies one-half the width of the panel and is $8\frac{1}{4}$ inches high. A 3-pole, 225 ampere frame breaker occupies a space of 12X but is a type "B" section. Therefore, it is only $8\frac{1}{4}$ inches high, since it extends the full width of the panel.

The neutral section, when the panel has main lugs only, is always placed at the opposite end of the panel from the main lugs and its main feed lug is brought to the main lug section. Under these conditions the neutral section occupies 6X space when the capacity of its largest branch lug is not over 400 amperes.

When a neutral section is required on panels having a main breaker, it is placed at the same end of the panel as the main breaker. In such cases its space requirements should be the same as a main lug section of capacity equal to main breaker capacity.

TYPICAL SPECIFICATIONS

CIRCUIT BREAKERS—(See page 15, Circuit breaker specification A.)

PANELBOARDS—Furnish and install where shown on plans or specified, panelboards mounted in enclosing cabinets on which shall be mounted equipment, as required, specified or shown in the drawings.

Panelboards shall be of the dead front type and shall be equipped with automatic branch circuit breakers for each branch circuit. Automatic branch circuit breakers shall conform to the detailed specifications as hereinafter specified. Number of branch circuits shall be as indicated on plans, specified or required by the number of branch circuits which will be connected to the panel.

Panelboards shall be of the unit type construction so designed that individual units can be removed from the front of the panel without disturbing adjacent units after first removing the trim.

Current carrying parts exclusive of circuit breakers shall be based on a maximum density of 1000 amp. per square inch.

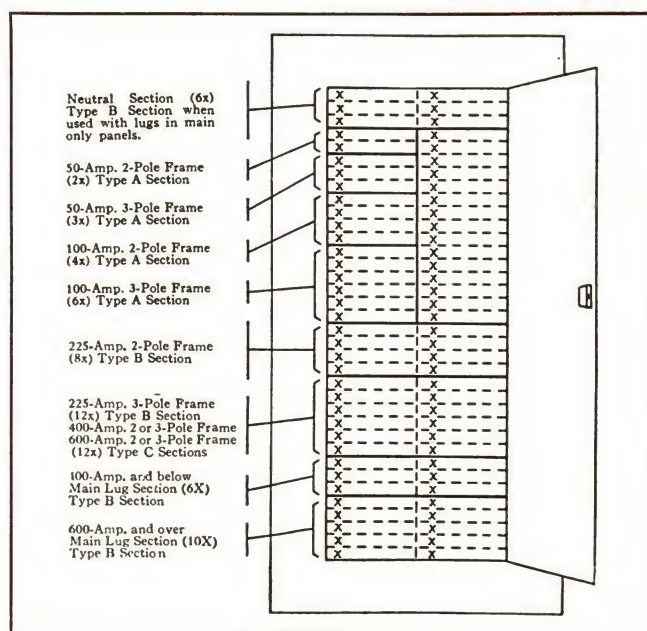
Panelboards shall have bus bars and branch circuits designed to suit the system and voltage.

CONVERTIBLE OR HIGH CAPACITY DISTRIBUTION PANELBOARDS

PANEL AND BOX DIMENSION DATA

All Inside Dimensions, in Inches

Total "X" Panel Space (obtained from diagram above)	Panel Only Height, Inches	Main Bus Capacity	
		100, 200 and 400-Ampere Box Height Inches	600, 800 and 1000-Ampere Box Height Inches
24X	16½	29½	35
25X to 32X	22	35	40½
33X to 40X	27½	40½	46
41X to 48X	33	46	51½
49X to 56X	38½	51½	57
57X to 64X	44	57	62½
65X to 72X	49½	62½	68
73X to 80X	55	68	73½
81X to 88X	60½	73½	79
89X to 96X	66	79	84½
LARGEST BREAKER IN THE PANEL		Box Width	Box Depth
FOR 50, 100 AND 225-AMPERE FRAME SIZE 2 AND 3-POLE BREAKERS		30 Inches	8 Inches
FOR 226 TO 400-AMPERE, 2 AND 3-POLE BREAKERS—With or Without 50, 100 and 225-Ampere Frame Sizes		35 Inches	10 Inches
FOR 401 TO 600-AMPERE, 2 AND 3-POLE BREAKERS—With or Without 50, 100, 225 or 400-Ampere Frame Sizes		40 Inches	10 Inches



LAYOUT DIAGRAM USED WITH NOFUZE CONVERTIBLE
DISTRIBUTION PANELBOARDS

Bus bars shall run up the center of the panel and shall have connected thereto the various branch circuits.

Unless otherwise specified, bus bars for each panelboard shall be equipped with main lugs only, the capacity of which shall be as required and shown on the plans. Where main protection is required automatic circuit breakers shall be used.

All current carrying parts exclusive of circuit breakers shall be of copper firmly fastened to the panelboard and arranged so as not to be displaced during installation.

Where several panelboards are fed by one feeder, solid through connections shall be made in the gutters as required.

Unless otherwise specified all panelboards shall be mounted in enclosing cabinets consisting of a code gauge, sheet steel box with trim and door. The box shall be manufactured from commercial galvanized sheet steel with corners lapped and riveted or by other approved methods. The trim shall be manufactured from one piece of full finish sheet steel (not galvanized).

Cabinets shall be of sufficient size to allow a gutter space of at least 4 inches on all sides around lighting panelboards.

Trim shall be fastened to cabinet by means of approved adjustable clamps.

Doors and trims of enclosing cabinet for lighting panelboards shall be painted with two coats of paint, the first being a primary coat and the second a finish coat of olive green lacquer.

All trims shall have door equipped with chrome plated flush type combination lock and catch, two keys being supplied with each lock. Doors over 48 inches in height shall be equipped with a chrome plated vault handle and 3 point catch with built-in lock using same key as flush locks and arranged to fasten door at top, bottom and center.

A directory holder with metal frame shall be furnished and installed upon the inside of the door of each cabinet.

All panelboards shall be built in accordance with the requirements of Underwriters' Laboratories specifications and recommendations of NEMA, and shall bear the Underwriters' Inspection Label.

Panelboards shall be as manufactured by the Westinghouse Electric & Manufacturing Company or approved equal.

WHERE TO BUY

See nearest Westinghouse Office or agent jobber shown on back cover. For further information request Catalog 29-000.



NOFUZE LIGHTING BRANCH CIRCUIT PANELBOARDS

Number of Circuits	Main Amps.	Types NAIB-3L and NAIB-3AB—Single Pole—Solid Neutral Mains 125/250 Volt, 3 Wire—Branches 125 Volt, 2 Wire			Types NA1B-4L and NA1B-4AB—Single Pole—Solid Neutral Mains 125/250 Volt, 3-Phase, 4 Wire Branches 125 Volt, 2-Wire		
		Panel, box and front Cat. No.	Height of Box I. d., In.	Approx. Ship. Wt., Lb.	Panel, box and front Cat. No.	Height of Box I. d., In.	Approx. Ship. Wt., Lb.
LUGS IN MAINS							
4	50	NA1B04-3L050	16¼	75	NA1B04-4L050	16¼	75
6	50	NA1B06-3L050	19	86	NA1B06-4L050	19	86
8	50	NA1B08-3L050	19	95	NA1B08-4L050	19	95
10	50	NA1B10-3L050	21¾	101	NA1B10-4L050	21¾	101
12	100	NA1B12-3L100	21¾	105	NA1B12-4L050	21¾	105
14	100	NA1B14-3L100	24½	112	NA1B14-4L050	24½	112
16	100	NA1B16-3L100	24½	120	NA1B16-4L100	24½	120
18	100	NA1B18-3L100	27¼	127	NA1B18-4L100	27¼	127
20	100	NA1B20-3L100	27¼	135	NA1B20-4L100	27¼	135
22	100	NA1B22-3L100	30	142	NA1B22-4L100	30	142
24	100	NA1B24-3L100	30	150	NA1B24-4L100	30	150
26	100	NA1B26-3L100	32¾	155	NA1B26-4L100	32¾	155
28	100	NA1B28-3L100	32¾	160	NA1B28-4L100	32¾	160
30	100	NA1B30-3L100	35½	179	NA1B30-4L100	35½	179
32	100	NA1B32-3L100	35½	180	NA1B32-4L100	35½	180
34	200	NA1B34-3L200	38¼	200	NA1B34-4L100	38¼	200
36	200	NA1B36-3L200	38¼	215	NA1B36-4L100	38¼	215
38	200	NA1B38-3L200	41	222	NA1B38-4L100	41	222
40	200	NA1B40-3L200	41	230	NA1B40-4L100	41	230
42	200	NA1B42-3L200	43¾	238	NA1B42-4L100	43¾	238

MAIN NOFUZE CIRCUIT BREAKER							
4	50	NA1B04-3AB050	21 $\frac{3}{4}$	105	NA1B04-4AB050	21 $\frac{3}{4}$	105
6	50	NA1B06-3AB050	24 $\frac{1}{2}$	112	NA1B06-4AB050	24 $\frac{1}{2}$	112
8	50	NA1B08-3AB050	24 $\frac{1}{2}$	125	NA1B08-4AB050	24 $\frac{1}{2}$	120
10	50	NA1B10-3AB050	27 $\frac{1}{4}$	130	NA1B10-4AB050	27 $\frac{1}{4}$	133
12	100	NA1B12-3AB100	32 $\frac{3}{4}$	140	NA1B12-4AB050	27 $\frac{1}{4}$	145
14	100	NA1B14-3AB100	35 $\frac{1}{2}$	145	NA1B14-4AB050	30	150
16	100	NA1B16-3AB100	35 $\frac{1}{2}$	150	NA1B16-4AB100	35 $\frac{1}{2}$	155
18	100	NA1B18-3AB100	38 $\frac{1}{4}$	160	NA1B18-4AB100	38 $\frac{1}{4}$	165
20	100	NA1B20-3AB100	38 $\frac{1}{4}$	170	NA1B20-4AB100	38 $\frac{1}{4}$	175
22	100	NA1B22-3AB100	41	182	NA1B22-4AB100	41	187
24	100	NA1B24-3AB100	41	195	NA1B24-4AB100	41	200
26	100	NA1B26-3AB100	43 $\frac{3}{4}$	202	NA1B26-4AB100	43 $\frac{3}{4}$	207
28	100	NA1B28-3AB100	43 $\frac{3}{4}$	210	NA1B28-4AB100	43 $\frac{3}{4}$	215
30	100	NA1B30-3AB100	46 $\frac{1}{2}$	217	NA1B30-4AB100	46 $\frac{1}{2}$	222
32	100	NA1B32-3AB100	46 $\frac{1}{2}$	225	NA1B32-4AB100	46 $\frac{1}{2}$	230
34	200	NA1B34-3AB200	54 $\frac{3}{4}$	255	NA1B34-4AB100	49 $\frac{1}{4}$	243
36	200	NA1B36-3AB200	54 $\frac{3}{4}$	275	NA1B36-4AB100	49 $\frac{1}{4}$	255
38	200	NA1B38-3AB200	57 $\frac{1}{2}$	300	NA1B38-4AB100	52	270
40	200	NA1B40-3AB200	57 $\frac{1}{2}$	325	NA1B40-4AB100	52	285
42	200	NA1B42-3AB200	60 $\frac{1}{4}$	350	NA1B42-4AB100	54 $\frac{3}{4}$	300

Number of Circuits	Main Amps.	Types A2B-2L and A2B-2AB—Double Pole Mains 125 Volt, 2 Wire—Branches 125 Volt, 2 Wire			Types NA2B-3L and NA2B-3AB, 3 Wire Mains, 3 Wire Branches—Mains 125/250 Volt, 3 Wire Solid Neutral Branches 125/250 Volt, 3 Wire Solid Neutral		
		Panel, box and front Cat. No.	Height of Box I. d., In.	Approx. Ship. Wt., Lb.	Panel, box and front Cat. No.	Height of Box I. d., In.	Approx. Ship. Wt., Lb.
MAIN LUGS ONLY							
4	50	A2B04-2L050	19	85	NA2B04-3L050	19	87
6	100	A2B06-2L100	21¾	95	NA2B06-3L100	21¾	97
8	100	A2B08-2L100	24½	115	NA2B08-3L100	24½	117
10	100	A2B10-2L100	27¼	125	NA2B10-3L100	27¼	127
12	200	A2B12-2L200	30	140	NA2B12-3L200	30	142
14	200	A2B14-2L200	32¾	155	NA2B14-3L200	32¾	157
16	200	A2B16-2L200	35½	170	NA2B16-3L200	35½	172
18	200	A2B18-2L200	38¼	200	NA2B18-3L200	38¼	202
20	200	A2B20-2L200	41	215	NA2B20-3L200	41	217
Same Dimensions for 250 Volt, 2/Wire A.C. Panels							
MAIN NOFUZE CIRCUIT BREAKER							
4	50	A2B04-2AB050	24½	115	NA2B04-3AB050	24½	117
6	100	A2B06-2AB100	32¾	130	NA2B06-3AB100	32¾	132
8	100	A2B08-2AB100	35½	145	NA2B08-3AB100	35½	147
10	100	A2B10-2AB100	38¼	160	NA2B10-3AB100	38¼	162
12	200	A2B12-2AB200	46½	215	NA2B12-3AB200	46½	217
14	200	A2B14-2AB200	49¼	230	NA2B14-3AB200	49¼	232
16	200	A2B16-2AB200	52	245	NA2B16-3AB200	52	247
18	200	A2B18-2AB200	54¾	260	NA2B18-3AB200	54¾	262
20	200	A2B20-2AB200	57½	275	NA2B20-3AB200	57½	277



LOW CAPACITY NOFUZE DISTRIBUTION PANELBOARDS

Number of Circuits	Main Amps.	Types A3B-3HL and A3B-3HAB 250 Volt Service Mains 250 or 125 V., 3 Ph., 3 W. Branches 250 V., 3 Ph., 3 W.			Types A2B-3HL and A2B-3HAB 250 Volt Service Mains 250 or 125 V., 3 Ph., 3 W. Branches 250 V., 1 Ph., 2 W.			Types A2B-2HL and A2B-2HAB 250 V. a-c. or 125 V. d-c. service Mains 250 V. a-c. or 125 V. d-c., 2 Wire Branches 250 Volt, 2 Wire		
		Panel box, and front Cat. No.	Height of Box I.d., In.	Approx. Ship. Wt. Lb.	Panel, box and front Cat. No.	Height of Box I.d., In.	Approx. Ship. Wt. Lb.	Panel, box and front Cat. No.	Height of Box I.d., In.	Approx. Ship. Wt. Lb.
MAIN LUGS					MAIN LUGS					
4	50	A3B04-3HL050	21 $\frac{3}{4}$	112	A2B04-3HL050	19	102	A2B04-2HL050	19	100
6	50	A3B06-3HL050	27 $\frac{1}{4}$	134	A2B06-3HL050	21 $\frac{3}{4}$	112	A2B06-2HL050	21 $\frac{3}{4}$	110
8	50	A3B08-3HL050	30	157	A2B08-3HL050	24 $\frac{1}{2}$	127	A2B08-2HL050	24 $\frac{1}{2}$	125
10	50	A3B10-3HL050	35 $\frac{1}{2}$	186	A2B10-3HL050	27 $\frac{1}{4}$	142	A2B10-2HL050	27 $\frac{1}{4}$	140
12	50	A3B12-3HL050	38 $\frac{1}{4}$	215	A2B12-3HL050	30	157	A2B12-2HL050	30	155
14	50	A3B14-3HL050	43 $\frac{3}{4}$	242	A2B14-3HL050	32 $\frac{3}{4}$	167	A2B14-2HL050	32 $\frac{3}{4}$	165
16	50				A2B16-3HL050	35 $\frac{1}{2}$	187	A2B16-2HL050	35 $\frac{1}{2}$	185
18	50				A2B18-3HL050	38 $\frac{1}{4}$	212	A2B18-2HL050	38 $\frac{1}{4}$	210
20	50				A2B20-3HL050	41	224	A2B20-2HL050	41	222
4	100	A3B04-3HL100	21 $\frac{3}{4}$	113	A2B04-3HL100	19	103	A2B04-2HL100	19	101
6	100	A3B06-3HL100	27 $\frac{1}{4}$	135	A2B06-3HL100	21 $\frac{3}{4}$	113	A2B06-2HL100	21 $\frac{3}{4}$	111
8	100	A3B08-3HL100	30	158	A2B08-3HL100	24 $\frac{1}{2}$	128	A2B08-2HL100	24 $\frac{1}{2}$	126
10	100	A3B10-3HL100	35 $\frac{1}{2}$	188	A2B10-3HL100	27 $\frac{1}{4}$	143	A2B10-2HL100	27 $\frac{1}{4}$	141
12	100	A2B12-3HL100	38 $\frac{1}{4}$	217	A2B12-3HL100	30	158	A2B12-2HL100	30	156
14	100	A3B14-3HL100	43 $\frac{3}{4}$	242	A2B14-3HL100	32 $\frac{3}{4}$	169	A2B14-2HL100	32 $\frac{3}{4}$	167
16	100				A2B16-3HL100	35 $\frac{1}{2}$	189	A2B16-2HL100	35 $\frac{1}{2}$	187
18	100				A2B18-3HL100	38 $\frac{1}{4}$	214	A2B18-2HL100	38 $\frac{1}{4}$	212
20	100				A2B20-3HL100	41	226	A2B20-2HL100	41	224
4	225	A3B04-3HL225	24 $\frac{1}{2}$	114	A2B04-3HL225	21 $\frac{3}{4}$	104	A2B04-2HL225	21 $\frac{3}{4}$	102
6	225	A3B06-3HL225	30	136	A2B06-3HL225	24 $\frac{1}{2}$	114	A2B06-2HL225	24 $\frac{1}{2}$	112
8	225	A3B08-3HL225	32 $\frac{3}{4}$	159	A2B08-3HL225	27 $\frac{1}{4}$	129	A2B08-2HL225	27 $\frac{1}{4}$	122
10	225	A3B10-3HL225	38 $\frac{1}{4}$	189	A2B10-3HL225	30	144	A2B10-2HL225	30	142
12	225	A3B12-3HL225	41	218	A2B12-3HL225	32 $\frac{3}{4}$	159	A2B12-2HL225	32 $\frac{3}{4}$	157
14	225	A3B14-3HL225	46 $\frac{1}{2}$	245	A2B14-3HL225	35 $\frac{1}{2}$	170	A2B14-2HL225	35 $\frac{1}{2}$	168
16	225				A2B16-3HL225	38 $\frac{1}{4}$	190	A2B16-2HL225	38 $\frac{1}{4}$	188
18	225				A2B18-3HL225	41	215	A2B18-2HL225	41	213
20	225				A2B20-3HL225	43 $\frac{3}{4}$	227	A2B20-2HL225	43 $\frac{3}{4}$	225
4	400	A3B04-3HL400	27 $\frac{1}{4}$	116	A2B04-3HL400	24 $\frac{1}{2}$	106	A2B04-2HL400	24 $\frac{1}{2}$	104
6	400	A3B06-3HL400	32 $\frac{3}{4}$	138	A2B06-3HL400	27 $\frac{1}{4}$	116	A2B06-2HL400	27 $\frac{1}{4}$	114
8	400	A3B08-3HL400	35 $\frac{1}{2}$	161	A2B08-3HL400	30	131	A2B08-2HL400	30	129
10	400	A3B10-3HL400	41	192	A2B10-3HL400	32 $\frac{3}{4}$	146	A2B10-2HL400	32 $\frac{3}{4}$	144
12	400	A3B12-3HL400	43 $\frac{3}{4}$	221	A2B12-3HL400	35 $\frac{1}{2}$	163	A2B12-2HL400	35 $\frac{1}{2}$	161
14	400	A3B14-3HL400	49 $\frac{1}{4}$	246	A2B14-3HL400	38 $\frac{1}{4}$	173	A2B14-2HL400	38 $\frac{1}{4}$	171
16	400				A2B16-3HL400	41	193	A2B16-2HL400	41	191
18	400				A2B18-3HL400	43 $\frac{3}{4}$	218	A2B18-2HL400	43 $\frac{3}{4}$	216
20	400				A2B20-3HL400	46 $\frac{1}{2}$	230	A2B20-2HL400	46 $\frac{1}{2}$	228
MAIN BREAKER					MAIN BREAKER					
4	50	A3B04-3HAB050	27 $\frac{1}{4}$	150	A2B04-3HAB050	24 $\frac{1}{2}$	144	A2B04-2HAB050	24 $\frac{1}{2}$	142
6	50	A3B06-3HAB050	32 $\frac{3}{4}$	168	A2B06-3HAB050	27 $\frac{1}{4}$	162	A2B06-2HAB050	27 $\frac{1}{4}$	161
8	50	A3B08-3HAB050	35 $\frac{1}{2}$	195	A2B08-3HAB050	30	180	A2B08-2HAB050	30	178
10	50	A3B10-3HAB050	41	220	A2B10-3HAB050	32 $\frac{3}{4}$	198	A2B10-2HAB050	32 $\frac{3}{4}$	196
12	50	A3B12-3HAB050	43 $\frac{3}{4}$	255	A2B12-3HAB050	35 $\frac{1}{2}$	216	A2B12-2HAB050	35 $\frac{1}{2}$	214
14	50	A3B14-3HAB050	49 $\frac{1}{4}$	282	A2B14-3HAB050	38 $\frac{1}{4}$	234	A2B14-2HAB050	38 $\frac{1}{4}$	232
16	50				A2B16-3HAB050	41	252	A2B16-2HAB050	41	250
18	50				A2B18-3HAB050	43 $\frac{3}{4}$	270	A2B18-2HAB050	43 $\frac{3}{4}$	268
20	50				A2B20-3HAB050	46 $\frac{1}{2}$	298	A2B20-2HAB050	46 $\frac{1}{2}$	296
4	50	A3B04-3HAB100	32 $\frac{3}{4}$	157	A2B04-3HAB100	30	146	A2B04-2HAB100	30	144
6	50	A3B06-3HAB100	38 $\frac{1}{4}$	175	A2B06-3HAB100	32 $\frac{3}{4}$	164	A2B06-2HAB100	32 $\frac{3}{4}$	162
8	50	A3B08-3HAB100	41	202	A2B08-3HAB100	35 $\frac{1}{2}$	182	A2B08-2HAB100	35 $\frac{1}{2}$	180
10	50	A3B10-3HAB100	46 $\frac{1}{2}$	227	A2B10-3HAB100	38 $\frac{1}{4}$	200	A2B10-2HAB100	38 $\frac{1}{4}$	198
12	50	A3B12-3HAB100	49 $\frac{1}{4}$	262	A2B12-3HAB100	41	218	A2B12-2HAB100	41	216
14	50	A3B14-3HAB100	54 $\frac{3}{4}$	289	A2B14-3HAB100	43 $\frac{3}{4}$	236	A2B14-2HAB100	43 $\frac{3}{4}$	234
16	50				A2B16-3HAB100	46 $\frac{1}{2}$	254	A2B16-2HAB100	46 $\frac{1}{2}$	252
18	50				A2B18-3HAB100	49 $\frac{1}{4}$	272	A2B18-2HAB100	49 $\frac{1}{4}$	270
20	50				A2B20-3HAB100	52	300	A2B20-2HAB100	52	298
4	225	A3B04-3HAB225	41	175	A2B04-3HAB225	38 $\frac{1}{4}$	169	A2B04-2HAB225	38 $\frac{1}{4}$	167
6	225	A3B06-3HAB225	46 $\frac{1}{2}$	193	A2B06-3HAB225	41	187	A2B06-2HAB225	41	185
8	225	A3B08-3HAB225	49 $\frac{1}{4}$	220	A2B08-3HAB225	43 $\frac{3}{4}$	205	A2B08-2HAB225	43 $\frac{3}{4}$	203
10	225	A3B10-3HAB225	54 $\frac{3}{4}$	245	A2B10-3HAB225	46 $\frac{1}{2}$	223	A2B10-2HAB225	46 $\frac{1}{2}$	221
12	225	A3B12-3HAB225	57 $\frac{1}{2}$	280	A2B12-3HAB225	49 $\frac{1}{4}$	231	A2B12-2HAB225	49 $\frac{1}{4}$	229
14	225	A3B14-3HAB225	63	307	A2B14-3HAB225	52	259	A2B14-2HAB225	52	257
16	225				A2B16-3HAB225	54 $\frac{3}{4}$	277	A2B16-2HAB225	54 $\frac{3}{4}$	275
18	225				A2B18-3HAB225	57 $\frac{1}{2}$	295	A2B18-2HAB225	57 $\frac{1}{2}$	293
20	225				A2B20-3HAB225	60 $\frac{1}{4}$	323	A2B20-2HAB225	60 $\frac{1}{4}$	321

INCREASE IN BOX HEIGHTS FOR INCREASED MAIN BUS CAPACITY

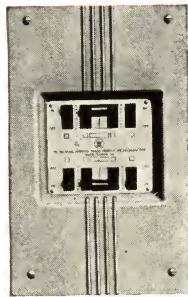
FOR LUGS ONLY IN THE MAINS

FOR CIRCUIT BREAKER IN MAINS

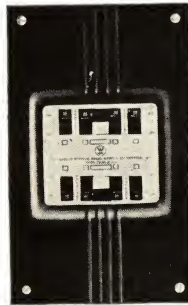
Type of Panelboard	From 50 Amperes to 100 Amperes	From 50 Amperes to 200 Amperes	From 100 Amperes to 200 Amperes	Type of Panelboard	From 50 Amperes to 100 Amperes	From 50 Amperes to 200 Amperes	From 100 Amperes to 200 Amperes
NA1B-3L	None	None	None	NA1B-3AB	5 $\frac{1}{2}$ "	11"	5 $\frac{1}{2}$ "
A2B-2L	None	None	None	A2B-2AB	5 $\frac{1}{2}$ "	11"	5 $\frac{1}{2}$ "
NA2B-3L	None	None	None	NA2B-3AB	5 $\frac{1}{2}$ "	11"	5 $\frac{1}{2}$ "
NA1B-4L	None	None	None	NA1B-4AB	5 $\frac{1}{2}$ "	11"	5 $\frac{1}{2}$ "
A2B-3L	None	None	None	A2B-3AB	5 $\frac{1}{2}$ "	11"	5 $\frac{1}{2}$ "



NOFUZE LOAD CENTER



FLUSH TYPE FRONT



SURFACE TYPE FRONT



TYPE M LOAD CENTER

APPLICATION

The new Westinghouse Nofuze Load Center is an ideal form of circuit protection for residences, small stores, farm buildings and elsewhere for the control of range, water heater, lighting

and appliance branch circuits. It has been inspected and approved by the Underwriters' Laboratories, Inc., and bears their label.

FEATURES

ELIMINATES FUSES AND SWITCHES—Westinghouse Nofuze Load Centers completely eliminate the need for replacing fuses when a short circuit or overload endangers the electrical wiring in the home. Instead of fuses, the Westinghouse Nofuze Load Center employs small circuit breakers which automatically trip open under conditions which would cause a fuse to "blow." With Nofuze circuit protection you have merely to remove the cause of the "short" or overload, then flip the breaker handle first to "Off," then to "On"—much as you turn the lights on or off with a wall switch. There is nothing to renew or replace. Anyone can easily and safely restore service with a Westinghouse Nofuze Load Center.

LOW COST—Westinghouse Nofuze load center prices are little if any more than the old type switch and fuse.

SAFETY—Factory seal prevents exposure of live parts to unskilled fingers.

POSITIVE PROTECTION FOR WIRING SYSTEM—Factory calibration cannot be changed since the construction is tamper-proof. The breaker handle cannot be held closed against a continuous short circuit or dangerous overload.

CONVENIENCE—Because of its small size and neat appearance you can install the Nofuze Load Center in a hallway or similar location where it will be most convenient to restore service "when the lights go out." You will not even need to light a match or candle. By merely running your fingers over the Nofuze breaker handles in the dark you can immediately locate the handle which has tripped. A flip with your finger and the lights come on.

HOW TO SELECT

Before attempting to select a load center, determine which type is required. The grounded neutral load center is used primarily as service entrance equipment and is limited to six branch circuits when a main switch is not used (refer to paragraph 2351-A of N.E.C. code). The insulated neutral type is generally required when the installation is made at some point other than the point of entrance of the service conductors.

This load center can be obtained up to 16 single poles.

After the type has been decided, determine the number of circuits required, keeping in mind that each 115/230-volt or 230-volt circuit requires a two-pole breaker (2 poles) and that each 115-volt circuit requires a single-pole breaker (1 pole). 2-pole breakers are actually two single-pole breakers with handles tied together mechanically. See page 21 for listings.

DIMENSIONS

Outline dimensions of load center boxes are shown in inches on the drawing.

TYPICAL SPECIFICATION

Load Center equipment shall be of the NOFUZE MULTI-BREAKER LOAD CENTER type. It shall include:

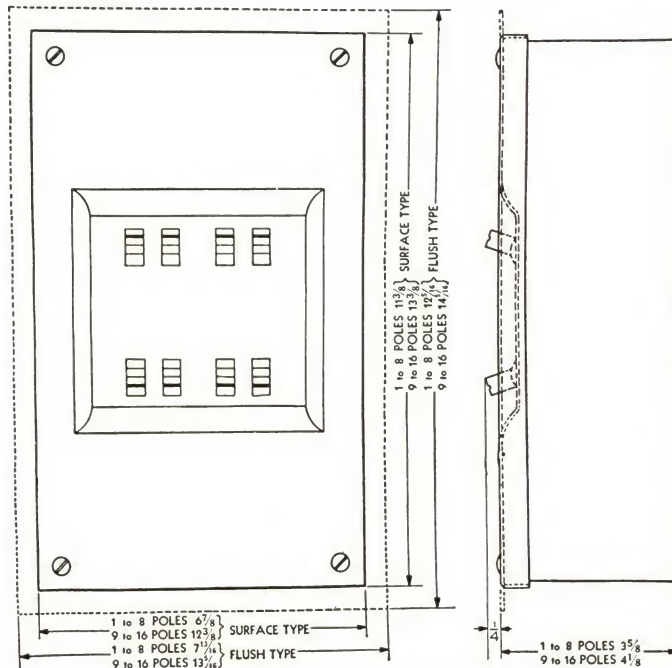
- ... branch circuits ... ampere single pole (2 wire S/N) 115 volt for lighting
- ... branch circuits ... ampere single pole (2 wire S/N) 115 volt for appliances
- ... branch circuits ... ampere two pole (3 wire S/N) 115/230 volt for ranges
- ... branch circuits ... ampere two pole (3 wire S/N) 115/230 volt for appliances

The box shall be equipped with a swing-out interior and adapted to (flush) (surface) mounting. Solid mains shall be supplied for (2 wire 115 volt a-c.) (3 wire 115/230 volt a-c.) single phase or 3 phase 4 wire, with ... ampere terminals. When application is for service entrance work, the load center shall bear Underwriters' Service Equipment Label.

WHERE TO BUY

See your nearest Westinghouse agent jobber. See list on the inside back cover.

For complete information on Nofuze Load Centers request a copy of Catalog 29-300.



OUTLINE DIMENSIONS FOR BOTH 8 AND 16-POLE LOAD CENTERS



NOFUZE LOAD CENTERS AND MULTI-BREAKER PANELBOARDS*

TYPICAL 8-CIRCUIT COMBINATIONS

Mains —3-Wire 115/230 Volt (A.C.) Grounded or Insulated Solid Neutral.

Branches—2-Wire 115 Volt, S.N. with 15, 20, 25, 35, or 50-Ampere, 1-Pole Nofuze Circuit Breakers or 3-Wire 115/230 Volt S. N. 2-Pole Nofuze Circuit Breakers.

GROUNDING NEUTRAL TYPE

INSULATED SOLID NEUTRAL TYPE

 FOUR BRANCH POLE UNIT	LUGS IN MAINS			DESCRIPTION BRANCH CIRCUITS			Amp. Mains	No. of Poles	Circuit Arrangement	Cat. No. F-Flush S-Sur- face	List Price	 SIX BRANCH POLE UNIT
	Max. Amp. Mains	Cat. No. F-Flush S-Surface	List Price	Total No. of Branch Poles	Capacity and No. of 2-Pole Branch Breakers	Capacity and No. of 1-Pole Branch Breakers						
70	25040-01	\$ 9.00	4		4-15	70	6	6 SP or 4 SP 1 DP or 2 SP 2 DP	5006 5104 5202	\$11.50 12.00 12.50		
70	25021-51	9.00	4	1-50	2-15	70	7	7 SP or 5 SP 1 DP or 3 SP 2 DP	5007 5105 5203	12.50 13.00 13.50		
70	25031-46	10.00	5	1-35	2-15—1-20							
70	25060-61	11.00	6	.....	6-15							
70	35041-41	11.00	6	1-35	4-15							
70	25041-51	11.00	6	1-50	4-15							
70	25041-56	11.00	6	1-50	1-20—3-15							
70	25042-58	13.50	8	1-50—1-35	4-15	70	8	8 SP or 6 SP 1 DP or 4 SP 2 DP	5008 5106 5204	13.50 14.00 14.50		
70	25042-51	13.50	8	2-50	4-15							

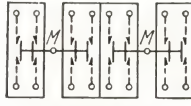
All orders must show ampere ratings of Each Circuit.

TYPICAL 16-CIRCUIT COMBINATIONS

SINGLE PHASE — 3-WIRE SERVICE

Mains —3-Wire 115/230 Volts (A.C.) Insulated S. N.

Branches—2-Wire 115 Volts, S.N. with 15, 20, 35 and 50-Ampere, 1-Pole Nofuze Circuit Breakers or 3-Wire 115/230 Volt S. N. 2-Pole Nofuze Circuit Breakers.

Typical Layout and Wiring Diagram	Ampere Main	Pole	Circuit Arrangement	Diagram	Cat. No. F-Flush S-Surface	List Price
 DIAGRAM C	100	12	12 SP or 10 SP 1 DP or 8 SP 2 DP	C C C	7012 7110 7208	\$30.00 30.00 30.00
			14 SP or 12 SP 1 DP or 10 SP 2 DP	C C C	7014 7112 7210	33.00 33.00 33.00
		16	16 SP or 14 SP 1 DP or 12 SP 2 DP	C C C	7016 7114 7212	35.00 35.00 35.00

All orders must show ampere ratings of Each Circuit.

TYPICAL TYPE M COMBINATIONS FOR WATER HEATER OR RANGE

SINGLE AND DOUBLE POLE BREAKERS (DOUBLE POLE BREAKERS SEPARATE TRIP)

Main or Branch Circuits	Circuit Ratings 2 Wire S/N 115 V. Single Pole Breaker and Neutral	3 Wire S/N 115/230 V. Double Pole Breaker and Neutral	GROUNDING SOLID NEUTRAL		INSULATED SOLID NEUTRAL	
			Cat. No. F-Flush S-Surface	List Price	Cat. No. F-Flush S-Surface	List Price
1	1-15 A.	1-15 A. 1-20 A. 1-25 A. 1-35 A. 1-50 A.	16101	\$4.70	16501	\$5.00
	1-20 A.		16102	4.70	16502	5.00
	1-25 A.		16103	4.70	16503	5.00
	1-35 A.		16104	4.70	16504	5.00
	1-50 A.		16105	4.70	16505	5.00
1		1-15 A. 1-20 A. 1-25 A. 1-35 A. 1-50 A.	16311	6.00	16711	6.30
			16322	6.00	16722	6.30
			16333	6.00	16733	6.30
			16344	6.00	16744	6.30
			16355	6.00	16755	6.30
2	2-15 A.	1-15 A. 1-20 A. 1-25 A. 1-35 A. 1-50 A.	16211	5.70	16611	6.00
	2-20 A.		16222	5.70	16622	6.00
	2-25 A.		16233	5.70	16633	6.00
	2-35 A.		16244	5.70	16644	6.00
	2-50 A.		16255	5.70	16655	6.00

TYPICAL PANELBOARDS—SAFETY TYPE NM1B

3-WIRE — SINGLE POLE — SOLID NEUTRAL

Mains —115/208 Volts (A.C.) Only, 3-Wire Solid Neutral.

Branches—115 Volt, 2-Wire with 15-Ampere, 115-Volt, Single-Pole Nofuze Circuit Breaker.

Boxes —Code Gauge Galvanized Sheet Steel, 4-Inch Gutters. All Boxes are 4¼ Inches Deep (I. D.).

Fronts —Code Gauge, Dull Finish, Sheet Steel, Patrol Green Duco Finish, Flush or Surface Type.

Branch Poles	Main Amperes	PANEL, BOX AND FRONT			BOX ONLY	
		Approx. Ship. Wt., Lb.	Catalog No.	List Price	Style No.	Height I. D. Inches
12	100	56	NM1B12-3L100	\$ 62.00	K-80433	23¾
14	100	60	NM1B14-3L100	68.00	K-80433	23¾
16	100	62	NM1B16-3L100	74.00	K-80433	23¾
32	100	84	NM1B32-3L100	114.00	K-80437	32¾
34	200	90	NM1B34-3L200	136.00	K-80438	35
36	200	93	NM1B36-3L200	140.00	K-80438	35

*The circuit combinations shown on this page represent only some of the more popular types. For official prices and complete circuit listings see Westinghouse Catalogs 29-300 and 29-409.



MULTI-BREAKER LIGHTING PANELBOARDS SAFETY TYPES NM1B AND NMM



LEFT — NM1B PANELBOARD

RIGHT — NMM PANELBOARD
WITH MAIN BREAKER

APPLICATION

The types NM1B and NMM Nofuze Panelboards meet the need of low priced circuit breaker type lighting panelboards.

They can be used where the service is a-c. and not over 115 volts to ground. They meet all Underwriters' requirements.

FEATURES

CIRCUIT BREAKER UNITS—The circuit breaker units used are the same as those used in the latest Nofuze load centers and have from one to four single-pole breakers mounted in a common unit. The breakers are slow-make and slow-break when actuated manually although automatic tripping is quick-break.

PANELBOARD CONSTRUCTION—The type of construction is of a design that almost any normal lighting application can be taken care of including some cases of light-duty power circuits.

Service can be arranged for 3/2-wire single-phase or 3-phase 4-wire. While catalog numbers cover branch circuits calibrated at 15 amperes; 20, 25, 35, and 50-ampere calibrations can be furnished if specifically requested.

The design provides for branch circuits from 4 to 40 single-pole or 2 to 20 double-pole.

The boxes are of the same high-grade construction as employed for other lines of Westinghouse panelboards.

HOW TO SELECT

First determine the number, size and type of branch circuits and mains. Branch breaker ratings should be selected from the table on page 23 to protect the size wire used. Then select the proper panel from Page 21 or Westinghouse Catalog 29-409.

Unless otherwise specified, boxes will be furnished with standard knockouts, but in the event users desire to drill their own boxes or require special drillings either will be furnished at no extra charge provided the information accompanies the order.

and that where special drillings are required no changes in box dimensions are necessary in order to place the knockouts.

Under no conditions will knockouts be furnished in the back of the boxes nor will special size cabinets or cabinets to include other apparatus than listed be manufactured.

This is necessary because of the fact that the low cost of these panelboards can only be maintained by manufacturing a standardized product.

DIMENSIONS

Width of NM1B boxes is approximately 15", depth 4 1/2" inside dimensions except the 3-phase, 4-wire main breaker panels which take a 20" wide by 5 3/4" deep box. NMM panels take

the larger box. Box heights for some of the NM1B panels are given on Page 21. The complete line of Westinghouse NM1B and NMM panelboards is shown in Catalog 29-409.

TYPICAL SPECIFICATIONS

Lighting panelboards shall be of the safety Nofuze automatic Multi-Breaker type.

The branch circuit breakers shall be single pole and shall be rated 115 volt a-c. with trip elements calibrated for 15-20-25-35 or 50 amperes as shown on plans. Automatic release is to be secured through action of a bimetallic thermal trip element engaging the releasing latch of the mechanism.

The circuit breakers shall have inverse-time-limit characteristics and shall be trip free on overloads.

The breakers shall be enclosed and sealed in units of approved moulded composition to eliminate tampering or unauthorized change in calibration.

They shall be interchangeable and operable in any position and removable from the front of the panelboard without disturbing adjacent units. Each branch circuit shall be distinctly numbered.

Unless otherwise specified, all panelboards shall be arranged with main terminal lugs at bottom.

The assembled panelboard shall be fastened to the cabinet by adjustable supports to provide for proper alignment.

Boxes shall be constructed of code gauge galvanized sheet steel. They shall be provided with 4" wiring gutters at top, bottom and sides.

Fronts shall be of code gauge stretcher leveled sheet and steel with trim of proper width. The door shall be fastened to the trim with concealed hinges and provided with flush type chrome-plated combination latch and lock. The front shall have a priming coat of paint over which shall be supplied a finished coat of green duco.

The panelboards and cabinets shall conform to the requirements of the Underwriters' Laboratories.

WHERE TO BUY

See nearest Westinghouse Office or agent jobber listed on back cover. For further information request Catalog 29-409.



COMMERCIAL COPPER WIRES AND METAL CONDUITS

B. & S. Gauge No.	Area In Circular Mils	Resist- ance* per 1000 Ft. at 68° F.	Breaker Size Re- quired to Protect Wire Amps.	RUBBER INSULATION		VARNISHED CAMBRIC INSULATION		Minimum Size of Conduit 2 and 3 Wire Systems									
				Allow- able Current Carrying Capacity	Volts Drop per 1000 Ft. at Rated Current	Allow- able Current Carrying Capacity	Volts Drop per 1000 Ft. at Rated Current	No. of Conductors in One Conduit									
								1	2	3	4	5	6	7	8	9	
....	2,000,000	0.0052	.....	1,050	5.5	1,260	6.6	3	5	6	...	...	...	...	...	...	...
....	1,900,000	0.0055	.....	1,010	5.6	1,210	6.7	3	5	6	...	...	...	...	...	...	...
....	1,800,000	0.0058	.....	970	5.6	1,160	6.7	3	5	6	6	...	...	...	...	...	...
....	1,700,000	0.0062	.....	930	5.8	1,120	6.9	3	5	5	6	...	...	...	...	...	...
....	1,600,000	0.0065	.....	890	5.8	1,070	7.0	2½	5	5	6	...	...	...	...	...	...
....	1,500,000	0.0070	.....	850	6.0	1,020	7.1	2½	4½	5	6	...	...	...	...	...	...
....	1,400,000	0.0075	.....	810	6.1	970	7.3	2½	4½	5	6	...	...	...	...	...	...
....	1,300,000	0.0084	.....	770	6.5	920	7.7	2½	4½	5	6	6	...	...	...	...	...
....	1,200,000	0.0088	.....	730	6.4	880	7.7	2½	4½	4½	6	6	...	...	...	...	...
....	1,100,000	0.0095	.....	690	6.6	830	7.9	2½	4	4½	6	6	...	...	...	...	...
....	1,000,000	0.0105	.....	650	6.8	780	8.2	2	4	4	5	6	6	...	...	...	...
....	950,000	0.0111	.....	625	6.9	750	8.3	2	4	4	5	6	6	6	...	...	...
....	900,000	0.0117	600	600	7.0	720	8.4	2	3½	4	4½	5	6	6	...	...	...
....	850,000	0.0124	550	575	7.1	690	8.6	2	3½	4	4½	5	6	6	...	...	...
....	800,000	0.0131	550	550	7.2	660	8.6	2	3½	4	4½	5	6	6	6	...	...
....	750,000	0.0140	500	525	7.4	630	8.8	2	3½	3½	4½	5	6	6	6	6	...
....	700,000	0.0150	500	500	7.5	600	9.0	2	3½	3½	4½	5	5	6	6	6	...
....	650,000	0.0168	450	475	8.0	570	9.6	2	3½	3½	4	4½	5	6	6	6	6
....	600,000	0.0175	450	450	7.9	540	9.5	2	3	3½	4	4½	5	6	6	6	6
....	550,000	0.0191	400	425	8.1	510	9.7	1½	3	3½	4	4½	5	5	6	6	6
....	500,000	0.0210	400	400	8.4	480	10.1	1½	3	3	3½	4	4½	5	5	6	6
....	450,000	0.0234	350	365	8.5	435	10.2	1½	3	3	3½	4	4½	4½	5	5	6
....	400,000	0.0263	325	325	8.5	390	10.3	1¼	3	3	3¼	4	4	4½	5	5	5
....	350,000	0.0300	300	300	9.0	360	10.8	1¼	2½	3	3½	3½	4	4½	4½	4½	5
....	300,000	0.0350	275	275	9.6	330	11.6	1¼	2½	3	3	3½	3½	4	4½	4½	4½
....	250,000	0.0420	250	250	10.5	300	12.6	1¼	2½	2½	3	3	3½	3½	4	4½	4½
0000	211,600	0.0497	225	225	11.2	270	13.4	1¼	2	2½	2½	3	3	3½	3½	4	4½
000	167,800	0.0625	175	175	10.9	210	13.1	1	2	2	2½	3	3	3	3½	3½	3½
00	133,100	0.0789	150	150	11.8	180	14.2	1	2	2	2½	2½	3	3	3	3	3½
0	105,500	0.0995	125	125	12.4	150	14.9	1	1½	2	2	2½	2½	3	3	3	3
1	83,690	0.1258	100	100	12.6	120	15.1	¾	1½	1½	2	2	2½	2½	3	3	3
2	66,370	0.1579	90	90	14.2	110	17.4	¾	1¼	1½	1½	2	2	2½	2½	2½	2½
3	52,630	0.2004	70	80	16.0	95	19.0	¾	1¼	1¼	1½	2	2	2	2½	2½	2½
4	41,740	0.2525	70	70	17.7	85	21.5	¾	1¼	1¼	1½	2	2	2	2	2	2½
5	33,100	0.3130	50	55	17.2	65	20.3	¾	1¼	1¼	1½	1½	2	2	2	2	2
6	26,250	0.394	50	50	19.7	60	23.6	½	1	1¼	1¼	1½	1½	1½	2	2	2
8	16,510	0.641	35	35	22.4	40	25.6	½	¾	1	1	1	1¼	1¼	1¼	1¼	1¼
10	10,380	1.010	25	25	25.3	30	30.3	½	¾	¾	¾	¾	1	1¼	1¼	1¼	1¼
12	6,530	1.601	20	20	32.0	25	40.0	½	¾	¾	¾	¾	1	1	1	1	1¼
14	4,107	2.565	15	15	38.5	18	46.2	½	¾	¾	¾	¾	1	1	1	1	1

*Also volts drop per 1000 feet per ampere.



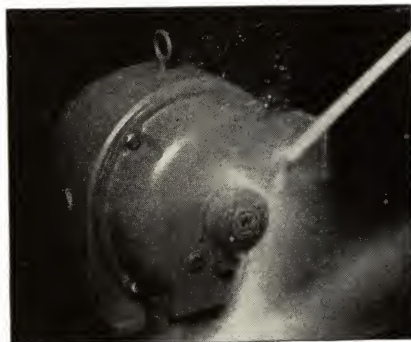
MOTORS AND CONTROLS

TYPE OF MOTOR		APPLICATIONS	DESCRIPTION
GENERAL PURPOSE TYPE CS—1-200 HP.		Blowers Buffers Compressors (unloaded start) Dish Washers Fans Lineshafts Polishers Pumps (centrifugal) Saws Stokers Woodworking Machines	Normal starting torque (up to 150% of full load). Low starting current 30 hp., 1800 r.p.m. and below (same as Linestart Class I). Full voltage starting, Standard voltages, 2 and 3 phase, 25, 50, 60 cycles, constant speed. Sealed sleeve or ball bearings.
LINESTART—CLASS I TYPE CS—1-200 HP.		<i>Meets Low Starting Current Requirements.</i> Applications same as General Purpose Motor.	Low starting current (no more than 5 to 6 times full load current). Other features same as General Purpose Motor.
LINESTART—CLASS II TYPE CS—1-200 HP.		<i>For Heavy Starting Duty Drives such as:</i> Compressors (without unloaders). Heavy Conveyors Reciprocating Pumps	High starting torque (up to 250% of full load). Low starting current. Other features similar to General Purpose Motor.
WOUND ROTOR TYPE CW—1-200 HP.		<i>For Adjustable—Varying Speed Drives, such as:</i> Blowers Conveyors Fans Pumps	Adjustable—varying speed. Heavy starting effort. Extremely low starting current with high starting effort for either constant or variable speed.
FH, FJ, CR, CU SINGLE PHASE—1-7½ HP.		<i>Heavy Starting Duty for Drives, such as:</i> Blowers Compressors Fans Pumps Shop Tools Stokers	Type FH Split Phase 1/6—1/3 hp. Type FJ Capacitor Start 1/50—3/4 hp. Type CR Repulsion Start—Induction Run 3/4—3 hp. Type CU Repulsion Induction 3—7½ hp.
GEARMOTORS		For use where the motor speed must be reduced. The types of motors shown above are available as gearmotors with built-in speed reduction.	46 standard ratios from 1.12:1 to 200:1. Gears capable of carrying maximum motor output. Output speeds from 4.4 to 1550 r.p.m. Motors and gearing parts matched. Minimum of moving and wearing parts. Small space requirements.

MOTORS FOR SPECIAL CONDITIONS

QUIET
OPERATING

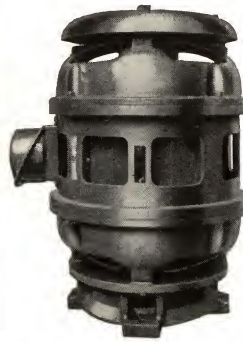
Where standard motors may not be quiet enough for certain building applications, quiet operating motors are necessary. Specifications should definitely call for "Westinghouse Quiet Operating Motors," with nameplates designating them as such.



A complete line of motors and control, fully protected against splashing or dripping water, may be used outdoors or indoors where the hose is used freely for cleaning.

SPLASH PROOF

VERTICAL



Vertical Squirrel Cage motors can be supplied in all commercial speeds, frequencies and voltages.

TOTALLY ENCLOSED



For use where conditions of abrasive or conducting dust are severe. The primary laminations, windings and all electrical parts are tightly sealed within the frame.



MOTORS AND CONTROLS

MANUAL CONTROL			MAGNETIC CONTROL		CIRCUIT PROTECTION (In Specifying, State Size and Type of Motor)
* FULL VOLTAGE	* † REDUCED VOLTAGE	† SPEED ADJUSTMENT	* † FULL VOLTAGE	* † REDUCED VOLTAGE	
Manual Starters Types WK-16 & WK-18 Up to 7½ Hp.	Autostarter (overload protec- tion) Class 10-700	no	Linestarter Class 11-299—or Combi- nation Linestarter Class 11-206	Resistance Type Starter Class 11-400 Up to 50 Hp. Autotransformer Type Class 11-600 Above 50 Hp.	Nofuze "De-ion" Circuit Breaker or Safety Switch
Same as general purpose	Same as general purpose	Same as general purpose	Same as general purpose	Same as general purpose	Same as general purpose
Same as general purpose	no	no	Same as general purpose	no	Same as general purpose
no	Rheostat Class 12- 012 up to 25 Hp. Drum Controller Class 12-300 Linestarter Class 11-200 for primary	Rheostat Class 12- 016 up to 25 Hp. Drum Controller Class 12-300 Linestarter Class 11-200 for primary	Linestarter Class 11-200—or Combi- nation Linestarter Class 11-206 with Secondary Controller	Resistance Type Starter Class 13-100	Same as general purpose
Sentinel Breaker Up to 1 Hp. Manual Starters Types WK-16 & WK-18	Rheostat Class 10- 030	no	Linestarter Class 11-200	Special	Nofuze Flipon or Safety Switch
Depends upon type of motor used. See above.			Depends upon type of motor used. See above.		

*With overload protection. †With low voltage protection.

MOTOR CONTROL EQUIPMENT



"DE-ION" COMBINATION
LINESTARTERS
CLASS 11-206



NOFUZE "DE-ION"
CIRCUIT BREAKERS



SAFETY SWITCHES



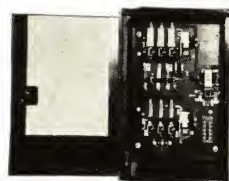
MANUAL STARTERS
TYPES WK-16 AND
WK-18



SENTINEL BREAKER
TYPE H



"DE-ION" LINESTART-
ERS CLASS 11-200



CLASS 11-400
MAGNETIC REDUCED
VOLTAGE STARTER



AUTO STARTERS CLASS
10-700



RHEOSTATS



DRUM CONTROLLER
(CLASS 12-300)



POWER FACTOR CORRECTION

The power factor of an a-c. system is the ratio of the true power (watts) to apparent power (volts × amps.). Its value depends on the type of load. For instance, a lighting load is nearly unity power factor while induction motor loads may have a PF of from 30% to 90% depending on the size, speed and per cent load carried. See table.

The rates of most power companies take power factor into consideration in one of the following manners:

- 1—Bonus—lower rates for high power factors.
- 2—Demand rates—power rate depends on Kv-a. demand—high PF lowers Kv-a. demand thus lowering rate.
- 3—Penalty—higher rates at low power factors.

From most power companies you can obtain information about your power factor, the amount of your electric bill over a period of time, and data that will enable you to determine how much this power bill can be decreased by raising your PF. In many cases the power company has facilities to work out all the details for you. They will recommend the level to which your PF should be raised, the size of capacitor required, and estimate the net savings.

To assist in determining the sizes of capacitor needed to raise

the PF to any desired level Westinghouse has developed the chart shown on Page 27.

Let us assume the following conditions: Present PF 70%, 400 Kw. load. How large a capacitor is needed to raise the power factor to 100%?

Lay a straight edge across the chart so that 70 on the left hand scale (present PF) and 100 on the right hand scale (desired PF) are connected. The middle scale shows the per cent reactive Kv-a. required—in this case 101%. Multiply the kilowatt load (400) by the per cent reactive Kv-a. (101%) to determine the size of

capacitor needed. Size is $400 \times \frac{101}{100} = 404$ Kv-a.

Capacitors may be mounted at each motor or grouped in one place. It is usually better to place the correction as near to the source of low power factor as possible to reduce feeder loss and improve voltage regulation.

Synchronous motors designed for 80% leading PF are often used for PF corrections. On a new installation of a large motor, it is often more economical to install an 80% PF synchronous motor in place of a squirrel cage induction motor because of the beneficial effect on the total power factor. The corrective Kv-a. of typical 80% PF synchronous motors at full load is 60% of the motor horsepower.

KW. LOAD AND POWER FACTOR FOR THREE-PHASE CS MOTORS

220-440-550 VOLT MOTORS											
Hp.	Poles	½ Load		Full Load		Hp.	Poles	½ Load		Full Load	
		Kw.	P.F.	Kw.	P.F.			Kw.	P.F.	Kw.	P.F.
1½	4	.27	54	.53	72	40	4	16.32	86	32.61	92
1	4	.53	55	.91	83	40	6	16.21	79	32.40	89
1½	4	.72	67	1.37	84	40	8	16.98	77	33.97	89
						40	10	17.25	73	33.91	85
2	4	.96	78	1.80	86						
3	4	1.35	63	2.65	87	50	4	20.00	93	40.50	93
3	6	1.36	66	2.78	80	50	6	21.40	85	41.90	93
						50	8	20.42	76	41.50	88
5	4	2.22	76	4.35	87	50	10	20.40	76	41.49	88
5	6	2.06	68	4.43	81	50	12	21.42	66	42.20	83
5	8	2.36	65	4.45	80						
7½	4	3.08	81	6.46	88	60	6	24.67	85	51.03	91
7½	6	3.30	69	6.27	85	60	8	25.00	78	49.42	89
7½	8	3.37	71	6.60	83	60	10	24.90	76	50.50	87
						60	12	25.60	67	50.30	82
10	4	4.36	81	8.70	88						
10	6	4.24	74	8.66	85	75	6	30.70	80	61.00	88
10	8	4.38	64	8.60	79	75	8	31.15	81	61.80	91
						75	10	31.21	74	62.30	87
15	4	6.16	85	13.30	92	75	12	30.75	64	61.10	81
15	6	6.30	75	12.90	87						
15	8	6.30	66	12.71	82	100	8	41.50	80	83.20	90
20	4	8.09	88	16.83	91	100	10	41.45	71	81.50	85
20	6	8.45	79	16.35	89	100	12	42.20	72	82.70	86
20	8	7.60	71	16.60	84						
20	10	8.20	64	16.96	79	125	8	51.80	85	101.40	92
						125	10	51.30	77	101	89
25	4	10.28	90	20.95	92	125	12	51.50	73	101.80	87
25	6	10.38	80	20.50	88						
25	8	10.62	75	21.00	86	150	8	55.95	84	122	92
25	10	10.41	70	20.80	82	150	10	62.50	75	120.90	88
						150	12	61.50	69	122.10	85
30	4	12.10	91	24.60	93						
30	6	12.30	77	24.70	88	200	8	80.40	84	161	93
30	8	12.58	78	24.74	88	200	10	83.50	73	163.2	86
30	10	12.86	75	25.42	87	200	12	82.50	71	163.2	84

2200 VOLT MOTORS											
Hp.	Poles	½ Load		Full Load		Hp.	Poles	½ Load		Full Load	
		Kw.	P.F.	Kw.	P.F.			Kw.	P.F.	Kw.	P.F.
40	4	18.50	67	35.08	82	75	10	31.13	71	61.93	85
40	6	16.90	59	34.00	73	75	12	37.75	68	63.44	84
40	8	17.40	73	35.41	87						
40	10	17.42	61	34.10	80	100	8	40.10	84	82.80	91
						100	10	41.40	78	82.90	89
50	4	22.00	69	43.60	88	100	12	42.90	75	82.60	87
50	6	21.29	80	41.55	91						
50	8	20.64	68	43.20	86	125	8	52.00	80	103.60	91
50	10	21.38	70	42.80	85	125	10	50.70	76	101.10	88
50	12	21.18	65	44.00	82	125	12	52.50	66	102.30	83
60	6	25.40	79	50.40	91	150	8	59.40	80	123.50	91
60	8	25.53	71	51.60	86	150	10	61.70	70	121.40	86
60	10	24.90	69	50.10	84	150	12	62.90	66	123	82
60	12	25.18	66	50.25	83						
75	6	30.10	79	59.80	84	200	8	82.00	77	161.50	85
75	8	31.10	75	61.15	86	200	10	83.50	74	164	86
						200	12	83.00	71	164	84

EXAMPLE

I. Assume that a certain building requires 3 induction motors, a 25 Hp., 10 pole, a 50 Hp., 12 pole, and a 75 Hp., 12 pole. What size capacitor would be required to raise the PF to 100%? From the table of Kw. load and power factor for a 25 Hp., 10 pole motor the Kw. is 20.8 and the PF 82%. From the power factor chart the reactive Kv-a. necessary to raise the PF to 100% is 68%. $20.8 \times \frac{68}{100} = 14.2$ reactive Kv-a. needed for the 25 Hp. motor. Do the same for each motor and we find that the total reactive Kv-a. needed is $14.2 + 30.0 + 43.4 = 87.6$ total reactive Kv-a. needed to increase the PF to 100%.

II. The above calculations are based on full load values but let us assume that for some reason the 12 pole, 75 Hp. motor was running at ½ load. From the table it takes 30.75 Kw. at 64% PF on ½ load. From the PF chart the reactive Kv-a. needed to correct from 64 to 100% is 119%. $30.75 \times \frac{119}{100} = 36.6$ reactive Kv-a. The total reactive Kv-a. is then $36.6 + 30 + 14.2 = 80.8$. In example I the Kv-a. required to correct to 100% PF was 87.6 Kv-a. To correct the same load to 90% PF would require only 28.3 Kv-a. For this reason, it is seldom economical to correct PF beyond 90 or 95 per cent.



CAPACITORS

APPLICATION

Westinghouse capacitors for power factor correction are for use wherever the load is of such a nature as to have a low power factor. They can be supplied in types and capacities to meet various installation requirements.

FEATURES

NON-INFLAMMABLE and NON-EXPLOSIVE—All capacitors are impregnated with a non-inflammable fluid, "Inerteen." No fire-proof vault is required for mounting indoors.

HERMETICALLY SEALED UNITS—Heavy welded steel cases and solder sealed bushings provide a type of construction which hermetically seals the capacitor unit and prevents any leakage or contamination of the impregnating fluid.

SOLDER SEALED BUSHINGS—An exclusive process which eliminates necessity of gum, cork or other materials for sealing bushings to capacitor cases and provides an absolute hermetic seal for protection of the capacitor unit.

LOW LOSSES—Losses will not exceed $\frac{1}{3}$ of one per cent of the normal Kv-a. rating.

SAFETY—Live parts are enclosed to prevent accidental contact. Inductive discharge coils automatically discharge capacitor in a minimum of time, when equipment is disconnected.

HOW TO SELECT

To determine required capacitor size, see page 26.

After determining the required size, select the proper capacitor from the tables below.

For complete information on types and sizes of capacitors and their application request a copy of Catalog 49-000.

TYPICAL SPECIFICATIONS

Capacitor equipment shall be Westinghouse inerteen rack type or approved equal, for operation on volts phase cycles with a rated capacity of Kv-a.

Capacitor equipment shall consist of capacitor units mounted in a frame or rack for (indoor) (outdoor) and (floor) (wall) mounting, dischargers, bus, connectors, circuit breakers, and necessary accessories.

CAPACITOR UNITS shall be an assembly of internal sections of aluminum foil separated by Kraft paper or equal, all enclosed in a welded steel case, vacuum dried and impregnated with a non-inflammable, non-explosive liquid. Terminal bushings shall be of the soldered to porcelain type, or equal, and form a positive hermetic seal.

RACKS shall be of welded sheet steel and angle iron construction with metal screen or sheet steel enclosures.

DISCHARGERS shall be of the wire wound induction type capable of reducing the residual voltage across the capacitor to 30 volts crest in not more than one minute.

BUS BARS shall be part of the frame and rigidly mounted on strong porcelain insulators.

CIRCUIT BREAKERS shall be equal to Westinghouse

{ De-ion (600 volts, 600 amp. and below)
CL carbon (600 volts, 600 amp. and above)
Oil (above 600 volts) } mounted in

a steel enclosure and form an integral part of the equipment.

OPERATING LOSSES shall not exceed $\frac{1}{3}\%$ of Kv-a. rating.

The complete equipment shall meet requirements of the Underwriters and tests and standards of A.I.E.E. and N.E.M.A.

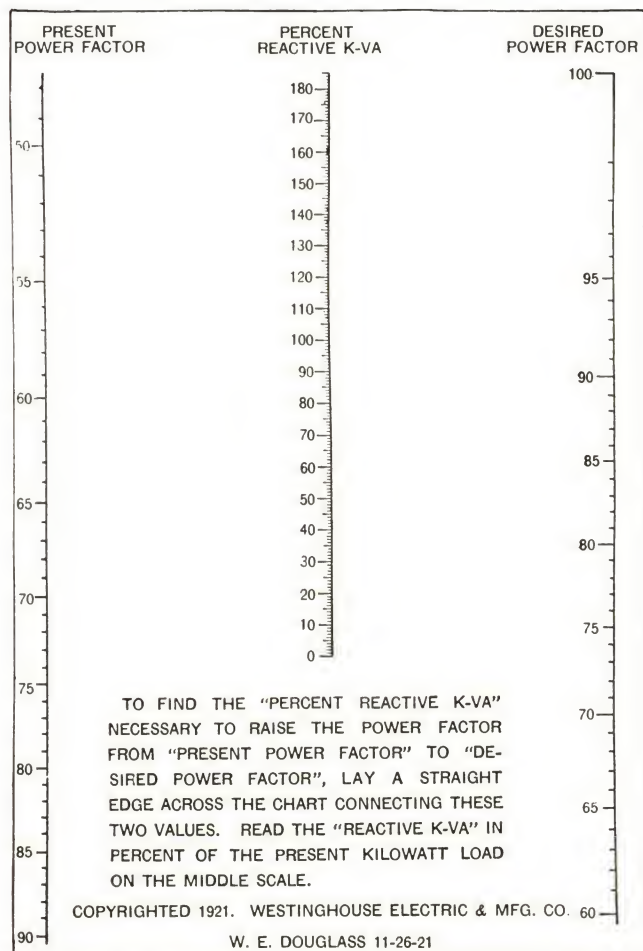
RATINGS, WEIGHTS AND DIMENSIONS

Kv-a. Max.	Approx. Dimensions (Inches)—Weights (Lbs.)												Watts Loss
	INDOOR FLOOR MOUNTING												
	230 Volts				460-575 Volts				2300-4000-4600 V.				
	D.	H.	W.	Wt.	D.	H.	W.	Wt.	D.	H.	W.	Wt.	
*SMALL RACK TYPE													
30	19	53	15	430	18	29	16	175	18	29	16	200	100
45	24	53	15	595	19	33	15	370	19	33	16	405	150
60	30	53	15	755	19	33	15	370	19	33	16	405	200
90	.....	.....	.....	.....	24	53	15	505	.....	.....	.....	.....	300
120	.....	.....	.....	.....	30	53	15	635	30	53	16	695	400
180	.....	.....	.....	.....	.....	.....	.....	.....	41	53	16	760	600
*LARGE RACK TYPE													
180	39	82	30	2600	.....	.....	.....	.....	.....	.....	.....	.....	600
270	69	82	30	2700	.....	.....	.....	.....	.....	.....	.....	.....	900
360	83	82	30	4700	39	82	30	2250	57	82	30	2400	1200
540	111	82	30	6950	69	82	30	3200	71	82	30	3350	1800
630	125	82	30	8000	.....	.....	.....	.....	.....	.....	.....	.....	2100
720	.....	.....	.....	.....	83	82	30	4250	85	82	30	4200	2400
1080	.....	.....	.....	.....	111	82	30	5950	113	82	30	6125	3600
1260	.....	.....	.....	.....	125	82	30	6900	127	82	30	6950	4200
*Can also be supplied for outdoor mounting.													

*Can also be supplied for outdoor mounting.

WHERE TO BUY

Consult nearest Westinghouse Office. See back cover. For complete information request a copy of Catalog 49-000.



ELEC-TRI-CENTER KITCHENS



FOR RESIDENCES • FOR APARTMENTS

WHAT THE ELEC-TRI-CENTER KITCHEN IS

The Westinghouse ELEC-TRI-Center Kitchen has been designed to meet the fast-growing demand for a modern kitchen that offers more than just "personality." It is ELEC-TRI-Center because it is all-electric—and planned around *three* work centers, incorporating widely advertised, universally accepted Westinghouse *Kitchen-proved* Range, Refrigerator, Dishwasher and (in some instances) Water Heater.

Women know about these kitchens, approve them, want them because they're timesaving, worksaving, moneysaving . . . because they make it easier to keep "help" or do without a maid . . . because they transform drudgery into a pleasant task.

Architects and builders specify ELEC-TRI-Center Kitchens because they're basically sound in design, plan and application—low in cost, easy to install.

CENTERS PROPERLY ORGANIZED AND LOCATED

Each center in this modern kitchen is organized according to *Home-proved* principles, in one complete, convenient work-unit.

Refrigerator and Preparation Center—Consists of cabinets, generous work surface and Westinghouse *Kitchen-proved* Refrigerator. Here are stored perishable and staple foods, preparation and baking dishes, preparation cutlery and gadgets. This brings food storage and preparation together at one logical point.

Range and Serving Center—This section includes Westinghouse *Kitchen-proved* Range, serving counter, upper and lower cabinets for storing platters, serving dishes, cooking utensils, such as frying pans and deep fat kettles, pot lids, cutlery, coffee maker, teapot and other equipment used during the actual cooking process.

Sink and Dishwasher Center—This Center is planned around the Westinghouse *Kitchen-proved* Dishwasher. Includes upper and lower cabinets and sink with work surface on each side. According to the established principle of storage, this Center houses the silver, china, glassware, paring knives, saucepans, cleaning materials—provides a ventilating compartment big enough for a week's supply of potatoes.

Note: Centers are available in precision-made wood cabinets and porcelain enamel work surface, and backsplashes. Or de luxe steel cabinets, Monel Metal, linoleum or Micarta work surface and backsplashes at slightly higher prices.

The centers are also placed in right relation to each other, so work flows easily, almost effortlessly, from one center to the next. The following proved *principles* govern their location.

1. The Refrigerator and Preparation Center is located near the outside entry where food is delivered.
2. The Range and Serving Center is nearest the dining room door, for greater convenience.
3. The Sink and Dishwasher Center must always be placed between the other two, to cut down kitchen mileage.

EASY ANSWERS TO "HOW MUCH STORAGE"

Westinghouse has developed a scientific method for figuring out exactly how much cabinet storage space is needed for EVERY installation. The method is accurate, easy to apply, tested by actual surveys of thousands of homes.

The number of bedrooms establishes the normal occupancy based on one adult person per bedroom for all except the master bedroom, for which two persons should be counted. Add two persons to number normally occupying a residence for entertaining and accumulation of articles that need storing.

CABINET STORAGE REQUIREMENTS FOR RESIDENCES

(Figured on the field-tested basis of 6 square feet of wall cabinet space for each person.)

Number of Bedrooms	Upper Shelf Storage Sq. Ft.	Base Storage Linear Feet	
		Minimum	Maximum
1	24	3	4½
2	30	4½	6
3	36	6	7½
4	42	7½	9
5	48	9	10½

STORAGE REQUIREMENTS FOR APARTMENTS

	Upper Shelf Storage Sq. Ft.		Base Storage Linear Feet	
	Min.	Max.	Min.	Max.
1 room with alcove kitchen and in-a-door bed.....	8	12	1½	2
1 bedroom.....	12	18	2	3

WESTINGHOUSE EQUIPMENT SPACE REQUIREMENTS

No. of Bed-rooms	Ranges			Refrigerators			Dishwashers	
	Width		D'th	Width		D'th	W'th	D'th
	Min.	Max.		Min.	Max.			
1	21½"	38½"	25"	24"	.....	25"	48"	25"
2	38½"	42½"	25"	30"	.....	25"	48"	25"
3	38½"	42½"	25"	30"	36"	25"	48"	35"
4	38½"	42½"	25"	36"	36"	25"	48"	25"
5	42½"	42½"	25"	36"	54"	25"	48"	25"

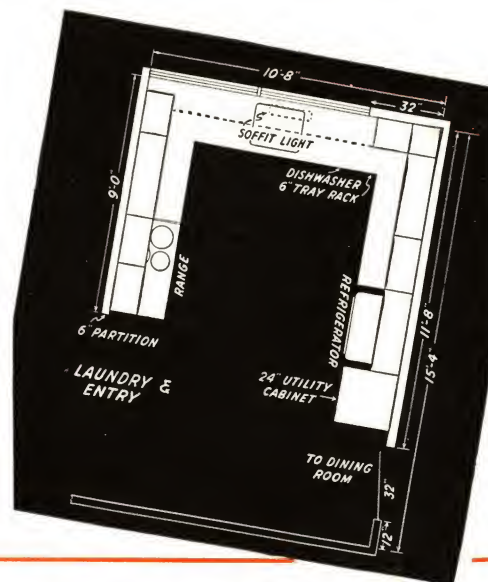
Both widths are given in the above table, because these large appliances are of absolute dimensions and cannot be squeezed into smaller spaces. Inch fractions are given for ranges to allow for easy installation. It is essential that these dimensions be adhered to.

Naturally, where minimum spaces are used, the selection of models is limited to the smaller sizes. Where maximum space is allowed, however, any Westinghouse Range or Refrigerator with sufficient capacity for the size of the residence may be installed. In the case of the small apartment, minimum range capacity and standard refrigerator capacity apply.

Westinghouse Ranges and Dishwashers are uniformly 36" high, which is standard height of work surfaces of cabinets. Cabinets are 25" deep, to conform to uniform appliance depth. From work surface to underside of wall cabinets is 16", which is standard except over the range, where 20" is the minimum.



KITCHEN PLANNING SERVICE



STANDARD KITCHEN PLANS

After careful study over a long period of time it has been found that certain kitchen *standard* arrangements can be used in a large percentage of present homes, and that these same standards can be of invaluable service to the architect, designer and builder in planning the kitchen area for new residences.

These standard plans have been designed carefully as to arrangement, balance of storage and practical use. You will find them efficient, and the kitchen a joy to the owner when installed. To the architect, designer or builder, these plans are definite guides that can be incorporated into residence plans in a minimum amount of time, solving the problem of just what is required in a kitchen. They are the result of over five years of extensive study of several thousand actual home kitchens. And they are designed to eliminate the guesswork from the planning of this important room.

Westinghouse kitchen plans cover the seven types of kitchens, which have come to be the accepted kitchen classification:

1. "U"-Shaped Kitchen
2. "L"-Shaped Kitchen

A Typical Westinghouse ELEC-TRI-Center Kitchen

This attractive "U"-Shaped Kitchen was planned by Westinghouse to fit one of the "modern" LIFE Houses, so widely publicized and duplicated all over the country. It is one of the many plans offered free to builders and architects.

3. "Broken-U" Kitchen
4. "Broken-L" Kitchen
5. "Two-Wall" Kitchen
6. Individual Center Kitchen
7. Straight Wall Kitchen

DINING FACILITIES: The matter of auxiliary dining facilities is important, as data collected during the last three years prove conclusively that the average home requires some place aside from the dining room where breakfast and snacks can be served. This same data indicates also that, in a very high percentage of homes, 60% to 70% of the meals are eaten in the kitchen or in a breakfast alcove.

MAKE USE OF WESTINGHOUSE KITCHEN PLANNING SERVICE

Westinghouse has a free kitchen planning consulting service to assist architects and builders with their kitchen planning problems. Ask your nearest Westinghouse dealer, or Westinghouse distributor for details. Two books of plans are also available. (1) Westinghouse Kitchen Planning Architects' File, scale drawings of 7 standard types, with 20 basic designs; (2) Kitchen-Laundry Plans for LIFE Houses. Either, or both, will be sent free on request. Write to Westinghouse Kitchen Planning Department, Mansfield, Ohio.



HOUSEHOLD REFRIGERATORS

APPLICATION

Household, self-contained type, domestic refrigerator for use in single or multiple dwelling construction, as well as clubs, schools, and miscellaneous application.

FEATURES

HERMETICALLY SEALED:	No belts, no pulleys, no shaft seal—not necessary to close valves if not in operation
FREON REFRIGERANT:	Odorless, non-inflammable—efficient—safe-proven
AUTOMATIC FUSING:	Built-in watchman—exclusive—automatically resets fuse, protecting mechanism—eliminates superintendent's attention to reset fuse on refrigerator
ALL STEEL:	No wood—termite proof—sturdy
THERMO-SEALED INSULATION:	High efficiency sealed with hot hydralene—non-hydroscopic
SANALLOY FROSTER:	Exclusive alloy—high conductivity—extra space for frozen food storage
TEMPERATURE CONTROL:	Mounted on unit in machine compartment—away from moisture
RESERVE CAPACITY:	Low running time, approximately one-sixth of time—uses little current. Lasts years longer, provides reserve capacity for hot weather
LEAST DEPRECIATION:	Can be amortized conservatively over longer period because of quality
5-YEAR WARRANTY:	Complete sealed-in mechanism guaranteed

Other features include convenient shelf arrangement, more usable space, automatic interior recessed light, heavy easy latch hardware, Dulux or Porcelain exterior models. MEAT-KEEPER, built in HUMIDRAWER, in some styles, and the exclusive easy EJECT-O-CUBE tray—express tray release in all models.

HOW TO SELECT

Refrigerators should carry reliable brand name, high grade service facilities locally and have proven low operating cost. On substantial quantities, the operating cost should be evaluated with the original cost over a 10-year period, in a similar manner as P.W.A. specifications on its recent purchase of 16,697 refrigerators in one order. Bidder to furnish guaranteed KWH figure with price per unit, delivered, installed and serviced, including 5-year warranty.

SPECIFICATIONS GENERALLY ADOPTED

Refrigerators shall be of the self contained, air-cooled, portable type. They shall be completely charged with refrigerant and oil, and properly adjusted at the factory so that no further immediate charging, oiling or adjustment may be necessary.

Refrigerator units shall be listed under the Underwriters' Laboratories Re-examination Service.

Refrigerators shall be constructed of materials that will not impart undesirable odors or tastes to food placed in the storage compartment.

All refrigerators shall be of a make and type that has been manufactured commercially for at least two years, and is known by the purchaser to have given satisfactory service. (This shall not be interpreted to exclude minor design changes which have not been in production two years).

REFRIGERATOR CABINET EXTERIOR

The front, side and top coverings of the refrigerator cabinet shall be sheet steel of not less than 20 gauge U.S.S. Steel shall be bonderized or treated in some equivalent manner to resist rusting.



The outer surface shall be finished with one prime coat and at least one finish coat of white lacquer, baked on.

CABINET CONSTRUCTION AND INSULATION

Cabinets shall be the type of construction known as "all steel" without the use of wood framing.

The insulation space shall be effectively sealed to prevent the entrance of moisture. This may be shown by placing the refrigerator in a 100° room of 100% humidity and running it for 30 days. The gain in weight shall not exceed 2 pounds.

The insulation shall be such as to prevent sweating of the cabinet. This may be shown by running the refrigerator in a 90° room of 75% relative humidity, maintaining a box temperature of approximately 43°. The exterior of the refrigerator should show no signs of sweating.

HARDWARE

The hardware shall be of sturdy construction and shall be attached to the cabinet in a substantial manner. Hinges shall be attached by other means than wood screws.

SHELVES

Shelves shall be so constructed and supported as to have adequate strength. Shelf supports shall be firmly fastened to the food liner and shall be tight and strong enough so that they cannot be readily turned or loosened with the fingers.

CONDENSING UNIT

This shall be of the hermetic type (no shaft seal).

Compressor shall be direct connected to the motor. The interior of the compressor shell shall be under low side pressure. All refrigerant joints shall be welded or brazed. Bolted joints and screw or flare tubing connections will not be acceptable. Condenser shall be of the finned tube type, cooled by a fan.

Overload protection shall be automatic resetting.

REFRIGERANT

Shall be Carbon dioxide; Dichlorodifluoromethane (Freon 12); Dichloromethane (Carrene No. 1); Dichloromonofluoromethane (Freon 21); Dichlorotetrafluoromethane (Freon 114); or Trichloromonofluoromethane (Freon 11).



OPERATING GUARANTEES AND TESTS

The performance of the refrigerators shall be equal to or better than the following values under conditions as specified. Bidders shall submit in their bids guaranteed performance data:

(A) No Load or Load Performance (4 cu. ft. Refrigerators).

	Average Room Temperature °F	Average Cabinet Temperature °F	Maximum KWH per 24 hrs.
No Load	90	43	1.05
No Load	110	48	1.80
Load	90	45	2.10
Load	110	50	3.0

(B) No Load and Load Performance (5 cu. ft. Refrigerators).

	Average Room Temperature °F	Average Cabinet Temperature °F	Maximum KWH per 24 hrs.
No Load	90	43	1.06
No Load	110	48	1.90
Load	90	45	2.20
Load	110	50	3.40

(C) No Load and Load Performance (6 cu. ft. Refrigerators).

	Average Room Temperature °F	Average Cabinet Temperature °F	Maximum KWH per 24 hrs.
No Load	90	43	1.08
No Load	110	48	2.10
Load	90	45	2.3
Load	110	50	3.7

The bidder shall state the guaranteed KWH consumption for 24 hours as determined by the average of 90° and 110° F. no load and load tests, specified under the detailed specification of the work to be performed, for the specific size refrigerator required.

ICE FREEZING PERFORMANCE

In a 110° F. room with a maximum average cabinet temperature of 48° F. at start of test, the refrigerator shall be capable of freezing the complete charge of water in less than six hours. The water shall be at a temperature of not less than 90° F. when it is placed in the refrigerator.

In conducting the load tests, the control shall be adjusted to give the average temperature given under "A", "B" and "C", with a constant 25 watt heating load in the food storage space. If the heating element is of the open type, it shall be shielded from the thermocouples. The heating element shall be placed 5" above the bottom of the inside of compartment, and as remote from the nearest thermocouple as practical.

In all tests, cabinet air temperature shall be determined by three thermocouples located as follows:

All thermocouples shall be in a vertical line halfway between the evaporator and the side of the cabinet and halfway between the front and back walls. One thermocouple shall be located 5" from the top of the liner, one 12" from the top and the other 5" from the bottom.

The recorded average cabinet temperature shall be the average of the temperatures as recorded by the three thermocouple readings. The thermocouples shall be in good thermal contact with a mass having a heat equivalent of not more than 5 grams of water.

For the no-load tests the thermocouples shall be read when the unit starts and stops and in all other tests the thermocouples shall be read at intervals of 30 minutes. The readings used in determining the no-load and food load performance shall be taken over a period of 24 hours for each test.

All accessories furnished with the refrigerator shall be in place during the test. In all tests the line voltage at the unit shall be maintained at 115 volts plus or minus 2 volts. Each refrigerator shall be separated by a distance of not less than 2' from the other refrigerators, from test room walls, and from heating and cooling devices used in the test room.

The refrigerator shall be so placed or shielded as not to be affected by direct radiation to or from the heating and cooling equipment. Air circulation in the test room shall be such as to secure the specified uniformity of temperature distribution but shall not cause a direct draft upon the refrigerator under test. Windows in the test room shall be provided with suitable radiation shield. The ambient temperature shall be maintained within plus or minus 1° F. of the specified values at points 3' above the floor and 1' from the sides, front and back of the cabinet. The vertical temperature gradient from the floor to a height of 7' shall not exceed .5° F. for each foot of vertical distance. All thermocouples used either for recording ambient temperatures or cabinet temperatures shall be shielded.

EVALUATION OF BIDS

For the purpose of determining the award, bids shall be evaluated based on the cost of the refrigerators, delivered, installed and serviced, including the bidder's 5-year unit protection plan, plus cost of operation of 1c per KWH for 10 years, as follows:

THE BID shall be evaluated by adding to the unit prices of the refrigerators, the respective guaranteed KWH consumption per 24 hours as determined by the average of the 90° F. and 110° F. room, no-load and load tests, multiplied by \$36.50, which is the estimated cost of current for 10 years at \$.01 per KWH. The resultant evaluated unit figures shall be multiplied by the respective quantities and the two evaluated total figures shall be added, and the result shall constitute the evaluated bid.

GUARANTEE

In order to check the guaranteed performance of the refrigerators after the award the Purchaser has the privilege of selecting four refrigerators of the type herein specified from stock for tests to be conducted in accordance with these specifications, the average of the four refrigerators tested to determine conformance.

If the KWH consumption as determined in these tests exceeds the guaranteed KWH consumption as given in the bid, the Contractor shall be liable for the difference in dollars between the guaranteed and the actual KWH consumption shown on these tests, evaluated over a 10-year period at a rate of 1c per KWH.

Such tests as desired by the Purchaser shall be made at the Purchaser's expense. If the Contractor so elects, the tests may be made at an impartial laboratory selected by the Contractor subject to the Purchaser's approval, at the Contractor's expense, exclusive of the traveling and subsistence expenses of the Purchaser's representatives. If the tests are to be conducted at a laboratory selected by the Contractor, the Purchaser reserves the right to have not more than two representatives present to witness such tests. The Contractor shall ship at his expense the required number of units to be tested to the laboratory selected.

WHERE TO BUY

Your local Westinghouse refrigerator distributor will gladly supply detailed specifications, illustrations, prices, etc. For nearest office, consult your phone book or obtain from Westinghouse District office—see list on pages 46 and 47.



ELECTRIC RANGES



Model RH-640 The Regent



Model BH-64 The Dictator



Model LH-63 The Coronet

APPLICATION

A domestic range for all types of cooking operations. Individual surface units—each providing high, medium, low and, in some cases, simmer heats—will handle every possible surface cooking operation. The oven, with two heaters and a control of temperature from 175° to 525°, takes care of all other cooking operations including—baking, roasting, broiling, oven meals, etc.

This range operates on standard, three wire service and can be plugged into a wall receptacle for a flush installation.

FEATURES

Following are a few of the many outstanding features:

- (1) **SOLID TOP COROX ECONOMIZER SURFACE UNIT.** Element wires are completely enclosed between stainless steel discs for more protection and long life, easy cleaning and more speed. The Economizer feature offers even simmer heat for better cooking results and more economy. Unit has heat retention quality to afford cooking as long as fifty minutes after current is turned off.
- (2) **SUPER OVEN.** Two heaters at top and bottom for greater speed—bakes biscuits in eight minutes from cold oven start. Scientific heat evenness assures uniform results and even browning. Overlapped blanket insulation for better heat seal. For average baking, current on only one fifth of time. Easy, waist high broiling with top 3000 watt unit.
- (3) **SINGLE DIAL CONTROL.** Combination switch and temperature setting. This one dial controls all oven operations.
- (4) **DEEP WELL COOKERS.** All long, slow cooking can be done economically.
- (5) **EASY ACTION SWITCHES.** Cam action, silver contacts give positive action and long life. All switches identified and numbered to correspond with surface units.
- (6) **FRONT OPENING OVEN VENTS.** Direct excess oven steam away from wall. Allow range installation flush with wall.
- (7) **PORCELAIN ENAMEL FINISH.** With acid-resisting platform.
- (8) **ONE PIECE UNIT BODY CONSTRUCTION.** With one piece combination platform and back-splasher.

HOW TO SELECT

Different sizes and capacities are available to meet all requirements. Sizes range from 24 inch width apartment size to 42 inch width de luxe. Capacity varies from apartment model with three surface units and one oven to four surface units and cooker with two ovens.

SPECIFICATIONS

1. Specifications apply to electric ranges, intended for domestic use. An electric range is defined as consisting of a cooking top, and an oven suitable for baking, roasting and broiling operations.

2. Contractors shall secure Underwriters' Laboratories listing of the range before shipment is made on any orders.

3. It is the intent of specifications to define ranges which are substantially constructed of heavy gauge materials so that they will be enabled to stand extremely heavy service with a minimum amount of maintenance. These requirements apply equally to mechanical and electrical construction, as well as the design of the range, switches, surface units and related parts.

4. The ranges shall have the following over-all dimensions: "W" "H" "D".

5. The range shall be so constructed that the back-splasher may be placed against a wall at the rear. Underwriters' approval must be specifically secured as to this feature. There shall be no controls, outlets or projections on either side of the range which would prevent cabinets or other pieces of apparatus, to be placed directly adjoining the range.

6. Ranges shall be designed to operate on . . . volt, 3-wire single phase, 60-cycle service.

7. Each range shall be equipped with an oven which with the door closed shall have an inside width not less than 16", inside height not less than 14", and inside depth not less than 17".

The oven lining shall be of enameling sheet not less than .025 thickness, finished inside and out in ground coat porcelain enamel.

Each oven shall be equipped with a unit or units which make possible satisfactory baking, broiling and roasting operations. Oven heating units shall be readily removable without the use of tools.

8. The cooking top shall have surface units with a diameter of the heated surface not less than 6" or more than 7" and with 1200 watts input at not in excess of 120 volts; also a unit or units with heated surface of not less than 8" or more than 9" diameter of 2000 to 2200 watts input at not in excess of 120 volts; where required a 5 to 6 quart capacity deep well cooker with a low heat of less than 150 watts shall be supplied in place of a large unit in four surface unit ranges.

All units shall be of the enclosed or metal encased type. The heated surface shall be of stainless steel or nickel chromium alloys which have been proved by experience to withstand continuous operation at 1300 degrees F. Units with cast iron heated surfaces will not be acceptable. Each unit shall have a supporting ring or pan of porcelain enameled ground coat steel, stainless steel, ribbed cast iron or nonferrous materials which will not deteriorate under the action of food spillage. Heating units in deep well cookers shall be of current design acceptable by the Underwriters' Laboratories.

9. Each surface heating unit shall be controlled by a switch. These switches shall be of not less than four positions, three heat, reversible, rotating type. Surface unit switches shall be of the load balancing type such that the neutral and the two outer wires of the circuit are connected to the heating unit with the switch in the HIGH heat position.

10. A terminal connection shall be provided to permit the fastening of the range connecting cable lugs (furnishing and connection of this cable will be done by others).

11. Each range shall be substantially crated to conform with the specifications of the Railroad Freight Inspection Bureau.

WHERE TO BUY

Contact the local Westinghouse Electric Supply Company or Westinghouse distributor as listed on pages 46 and 47.

SPECIFICATIONS AND DIMENSIONS

Type and Name	Dimensions	No. of Ovens	Platform Height From Floor	Oven Size	Surface Units	Surface Cooker	Toe Base	Maximum Input KW
MH-664 Emperor	(W) (H) (D) 42"x48" x25"	2	36"	(W) (H) (D) 16"x14"x19½"	4	No	Yes	15.81
RH-640 Regent	42"x48" x25"	1	36"	16"x14"x19½"	3	1	Yes	10.7
BH-64 Dictator	38"x41½"x24½"	1	36"	16"x14"x19½"	3	1	Yes	9.79
KH-64 Diplomat	38"x41½"x24½"	1	36"	16"x14"x19½"	3	1	Yes	9.76
TH-64 Conqueror	38"x41½"x24½"	1	36"	16"x14"x19½"	3	1	(Legs)	9.76
LH-63 Coronet	21"x41½"x24"	1	36"	16"x14"x18½"	3	No	Yes	8.4



ELECTRIC WATER HEATERS

APPLICATION

Electric water heaters are primarily designed to supply complete domestic hot water service, and are available in various capacities for different home requirements. Round and square models are available for either kitchen or basement installations, including two counter height (36") models with one piece porcelain enamel top and back-splasher.

These heaters may also be used in commercial and industrial applications, such as lavatory and washroom installations, where installation at the point of use is desirable from an economic standpoint.

FEATURES

COMPLETELY AUTOMATIC—Thermostatically controlled, requiring no attention from user.

HIGHLY EFFICIENT—Heat is supplied by inserting elements directly in the tank, in direct contact with the water, thus realizing practically 100% heat transfer. Thoroughly insulated at all points, radiation losses are at a minimum.

MAXIMUM HOT WATER DELIVERY—A specially designed baffle, directly over the cold water inlet, prevents incoming cold water from mixing with the heated water, thus guaranteeing maximum hot water delivery.

SAFETY—All hazard of flame and fumes is eliminated. All live parts are insulated, and protected by steel casing, to protect against accidental contact. Heaters are grounded when connected to piping system, eliminating possibility of shock.

LOW MAINTENANCE COSTS—Design and construction are such that service is negligible. Being completely automatic, requiring no attention from user, possibility of accidental damage is practically eliminated.

MODERN APPEARANCE—Casings are simple in design and finished in White Dulux over bonderized steel and, as no combustible fuel is used, will retain their newness for years.

EASE OF INSTALLATION—All heaters, except the 120 gallon size, are completely assembled when shipped, and require only connection to water and electric service.

HOW TO SELECT

(A) Heaters are available with either galvanized or Monel tanks, and local water conditions will determine which may be used.

(B) Capacities required are somewhat dependent on the type of electric rate available, and the local utility should be checked as to this point.

(C) Wattages, voltage and wiring specifications are also dependent on the utility rate structure, and should be checked.

DIMENSIONS

Due to the multiplicity of models and sizes available, space does not allow listing of all dimensions. However, these heaters are all designed for home use, and only unusual conditions will prevent their easy installation in space normally available for such equipment.

TYPICAL SPECIFICATIONS

1. **GENERAL**—Storage type electric water heaters are to be completely assembled, or complete for assembly on installation. They are to be automatic, the standard catalog product of manufacturers regularly engaged in the electric water heater business.

2. **APPROVAL**—Heaters are to be listed by the Underwriters' Laboratories, Inc.

3. **CONSTRUCTION**—Storage tanks shall be constructed of

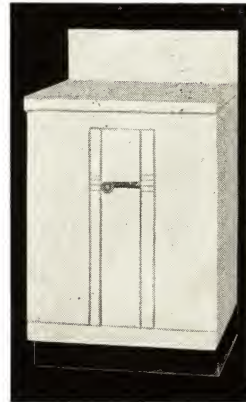
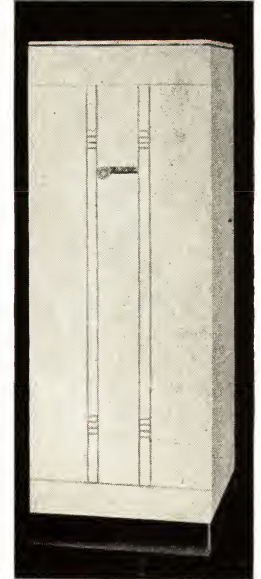


Table Top Model—
capacities 15 or 30 gal.



Round Model—
capacities 30, 40, 52, 66,
80 and 120 gal.



Square Model—
capacities 5, 10, 30, 40, 52,
66, 80 and 120 gal.

galvanized steel or non-ferrous alloy,* all joints welded or riveted, or both. Tanks shall be designed for a hydrostatic test pressure of not less than 300 lbs. per square inch. Pipe and fittings shall be of galvanized iron, brass or copper.* The hot water outlet shall be equipped with a heat trap. Provision shall be made for installation of an approved relief valve locally. A drain valve with hose connection shall be provided at the extreme bottom of the tank. A baffle shall be provided within the tank, to minimize mixing of cold with hot water. Exterior jacket shall be of steel suitably rustproofed and with baked enamel finish in manufacturer's standard colors. Tanks shall be insulated with approved material, Palco Wool or equal, to an average thickness of not less than 3" at sides, 4" at top, and 2" at bottom.

(*Depending on local water conditions.)

4. **HEATING ELEMENTS**—Shall be of immersion type, bolted to tank in such manner that they can be easily removed for service or cleaning. One heating element shall be provided approximately 1/4 of tank capacity down from the top of tank and a second element shall be provided as near the bottom of the tank as practicable. Elements shall be rated in accordance with requirements of the local utility.

5. **THERMOSTATS**—Each heating element shall be controlled by a separate thermostat adjustable over a minimum range of 120° F. to 170° F. Settings shall be plainly indicated, and thermostats should be set, at factory, at 145° to 150° F.

6. **WIRING**—All wiring shall be of approved asbestos covered type, installed in rigid conduit or tubing within the casing, and shall terminate in an outlet box easily accessible for electrical connections.

7. **GARANTEE**—Heaters furnished under these specifications shall be guaranteed, as to materials and workmanship, for a period of one year from date of purchase.

OPTIONAL SPECIFICATIONS—In the event of the local utility having specific requirements for the approval of electric storage water heaters, these specific requirements should be added.

WHERE TO BUY

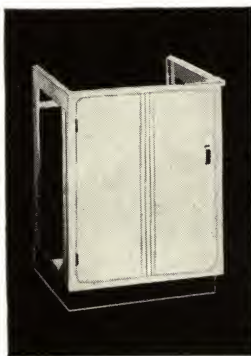
Westinghouse Electric Water Heaters are available from all our agent jobbers, listed separately on pages 46 and 47. For additional information, request Water Heater Catalog No. 9WH-0301.



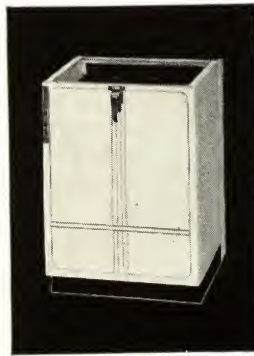
ELECTRIC DISHWASHERS



DWB-48—Micarta top complete sink and dishwasher combination; with Monel metal top, DWM-48, with green Jaspe Linoleum top, DWL-48.



DWC-24—24" Sink cabinet unit only, without top or sink basin.



DW-24—24" dishwasher unit only, without top.



DW-23—Portable dishwasher mounted on casters. Requires no plumbing connections.

APPLICATION

Designed for application in individual homes or multiple residences, the electric dishwasher is installed in connection with the sink. Models can be a complete sink and dishwasher combination including all the usual sink equipment in addition to the dishwasher unit, or an individual dishwasher unit to be installed underneath an existing counter surface and adjacent to the sink. A completely portable model requiring no plumbing connections is available for rented homes or places where a permanent installation cannot be made.

The electric dishwasher will wash dishes, glasses, silverware, and pots and pans, cleaning all the utensils soiled during the preparation or serving of a meal in the home. It is not designed for commercial restaurants or institutions.

FEATURES

The front opening door of the Westinghouse dishwasher assures greatest convenience in use. It opens down, out of the way, providing an always available work surface directly adjacent to the sink where it is most useful when cleaning up after a meal.

The two sliding racks assure easy loading without bending over. Either rack can be loaded or unloaded without moving the other. Thus lifting heavy racks is eliminated. Racks have lock stops so they cannot be pulled out too far and dropped. They can, however, be removed easily by lifting.

Visible fill and drain control gives positive indication when the tank is full and empty. The washing compartment is charged with water through a double fixture mounted on the back of the sink basin. The fixture acts like a funnel. When filling, the faucet is swung over the opening and water run through the funnel fixture into the tank. No additional pipe directly connected to the compartment is required and no extra faucet connections needed. Water connections are made only to the standard sink faucet.

When the tank is charged with the correct amount of water (5 quarts) it automatically begins to pump out through the combination fill and drain fixture. Discharged water runs down through the sink basin and into the standard sink trap.

Centrifugal pump discharge forces water at high speed up to the sink basin where it drains through the sink trap. No special trap or gravity drain pipe is required or directly connected to the washing compartment. Forcing the water out removes the danger of clogging drain pipes and provides a completely sanitary cabinet with no possible cross connections between water supply and drain.

Two controls operate the dishwasher—a motor switch to turn the motor off and on and a drain control to open and close the valve to fill or empty the washing compartment.

Automatic safety switch. When the door is opened the current is automatically cut off, shutting off the motor. It is impossible to run the motor or water impeller when the door is opened.

In over-all appearance the dishwasher matches standard cabinet dimensions. It has a one inch over-hang and a 4" x 3" toe space base.

HOW TO SELECT

Three different models of the complete sink and dishwasher are available. Sink tops are Black Westinghouse Micarta Monel Metal or Green Jaspe Linoleum. The top selected can thus be matched up with other counter surfaces in the kitchen. The complete sink and dishwasher combination should be selected when an individual installation can be made away from other cabinets and where an unbroken counter surface is not required. The unit can then be installed as a complete unit.

Where a continuous counter surface is desired, this can be installed independently of the dishwasher and the dishwasher unit itself installed underneath the counter adjacent to the sink. This unit is the DW-24. The sink front is designed to match the DW-24 and makes a complete 48" unit without top or sink basin. These two units are especially desirable in new home construction following the modern trend of unbroken counter surfaces.

The portable dishwasher can be classed as a plug-in appliance to be used where the cabinet type cannot be installed.

DIMENSIONS

Complete Sink and Dishwasher Combination

Height to Work Top—36". Height of Backsplash—7 $\frac{3}{4}$ ". Top—48" x 25". Sink Basin—20" x 18". Floor Space Required—48" x 25". Removable Filler Strips (placed at back of side panels)—2" wide. Toe Space—3" deep x 4" high.

Dishwasher Unit Only

24" wide x 24" deep x 34 $\frac{1}{2}$ " high. Toe Space—3" deep x 4" high. Metal base strip removable to allow greater flexibility in treatment of floor covering. Fill and drain fixtures mounted on sink basin.

SPECIFICATIONS

Complete Sink and Dishwasher

FINISH: Cabinet—high-temperature white Dulux. Work Top—green Jaspe linoleum, Monel Metal, or black Micarta. Sink Basin—Monel Metal. Dishtank Interior—acid-resisting, white porcelain enamel. Dishracks and Silver Basket—rustproof metal with dull nickel finish.

MOTOR: Westinghouse low-starting current, $\frac{1}{4}$ H.P. 115-volt, 60 cycle, A.-C. or equivalent.

WIRING REQUIREMENTS: The outlet box, mounted on the motor, for house wiring connections.

PLUMBING REQUIREMENTS: Faucets take standard $\frac{3}{8}$ " pipe and sink basin is furnished with nipple for standard 1 $\frac{1}{2}$ " waste connection. Waste trap not furnished.

CAPACITY: Dishes and glassware—57 pieces; silverware—45 pieces. Will accommodate all average-size plates. Water required for each wash and each rinse—5 to 6 quarts.

DW-24 Dishwasher Unit Only

FINISH: Cabinet—high-temperature white Dulux. Dishtank Interior—acid-resisting, white porcelain enamel. Dishracks and Silverware Basket—Rustproof metal with dull nickel finish.

EQUIPMENT: Two dishracks, silverware basket, dish scraper, measuring spoons, package of washing compound, drain and filler tubes, combination fill and drain fixture, and installation and operating instructions.

MOTOR: Westinghouse low-starting current, $\frac{1}{4}$ H.P. 115 volt, 60 cycle, A.-C. or equivalent.

WIRING REQUIREMENTS: The outlet box is mounted on the motor for permanent line connection.

CAPACITY: Dishes and glassware—57 pieces; silverware—45 pieces. Will accommodate all average-size plates. Water required for each wash and each rinse—5 to 6 quarts.

WHERE TO BUY

Westinghouse Electric Dishwashers can be purchased through authorized Westinghouse dealers or distributors located throughout the country. For additional information ask for specification sheets 7DW-0601 and 8DW-0601.



HOME-PROVED LAUNDRY EQUIPMENT

A MODEL FOR EVERY TYPE OF FAMILY

HOME-PROVED: Every claim made for Westinghouse Washers and Ironers has been proved by hundreds of *notarized* tests . . . in homes all over the country . . . under normal home conditions. These *certified* tests assure laundry equipment that does the things it's supposed to do.

HOME-PROVED WASHER FEATURES: French-type turbulator for "Natural" washing action. "Sediment Zone" to guard against recirculation of soil during washing operation. Porcelain enamel tub—easier to clean, helps maintain water temperatures. *Automatic Pressure Wringer* with famous Westinghouse safety devices.

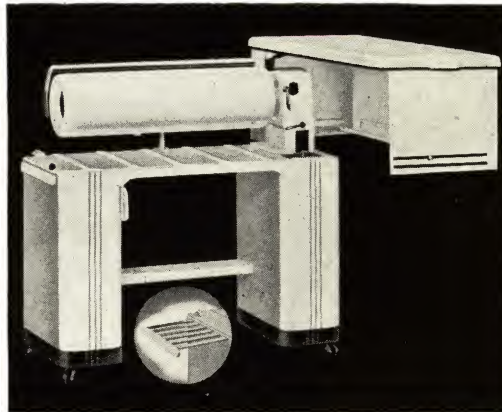
Welded one-piece steel chassis and sturdy bracing for longer life and to prevent "creeping." Quiet, vibrationless operation.

HOME-PROVED IRONER FEATURES: Super-size roll and shoe to increase ironing speed. Adjust-o-matic Temperature Control—assures better results, faster ironing, greater saving of effort, as well as electricity—divided heating element individually controlled prevents one end of roll from overheating while other end is in use. Simplified controls for operating ironer. Emergency release lever frees shoe from roll instantly.



SPINNER DRYER

OVER-ALL DIMENSIONS: 39½ in. L, 24¼ in. W, 39¼ in. H. Damp-dries one batch of clothes while washing another. Tub capacity: 9 lbs. washables (dry weight). Tub empties itself automatically through turret; no pump required to empty spinner.



DE LUXE ADJUST-O-MATIC IRONER

OVER-ALL DIMENSIONS: 36¾ in. L, 16½ in. W, 37 in. H. Super-size roll and shoe, divided heating element individually controlled, 2 speeds, 2 operating controls. Pilot light, on-and-off motor switch and swingout top. Inset shows handy extension shelf which pulls out easily and prevents soiling of garments which otherwise might drop on floor.

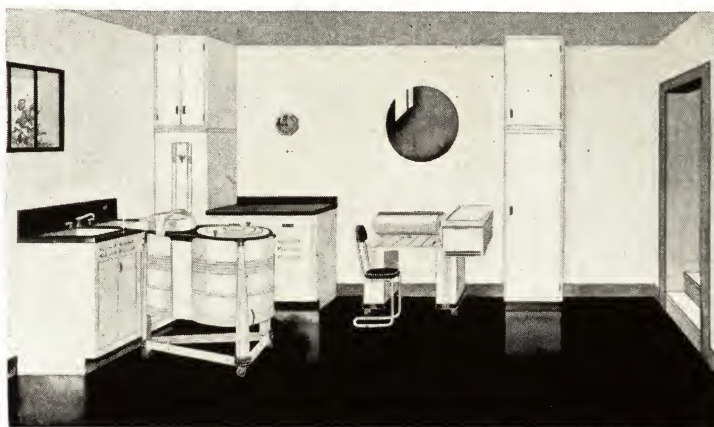
ADDITIONAL MODELS

Four Wringer-type washers with home-proved features and tub capacities of 6, 7, 8 and 9 lbs. washables (dry weight). *Maximum dimensions:* 31¼ in. L, 28 in. W, 48¼ in. H. *Minimum dimensions:* 29¼ in. L, 26 in. W, 48¼ in. H.

Three Ironers: 1 cabinet and 2 open models, with *Home-proved* features, all except lowest priced model have Adjust-o-matic heat control. *Maximum Over-all Dimensions:* 36¾ in. L, 16½ in. W, 39 in. H.

WHERE TO BUY

See the nearest Westinghouse distributor, as listed on Pages 46 and 47.



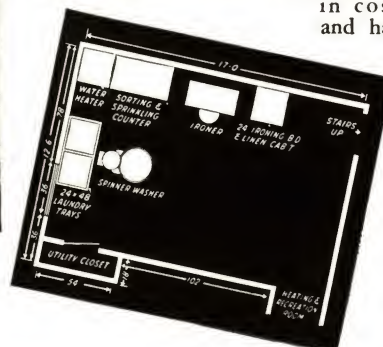
**SEND FOR
FREE PLANS**

NEW WESTINGHOUSE LAUNDRY PLANS—Scale drawings, with supplementary data and specifications free on request. Write to Westinghouse Electric & Manufacturing Company, Mansfield, Ohio.

CO-OPERATION WITH ARCHITECTS HOME LAUNDRY PLANNING SERVICES

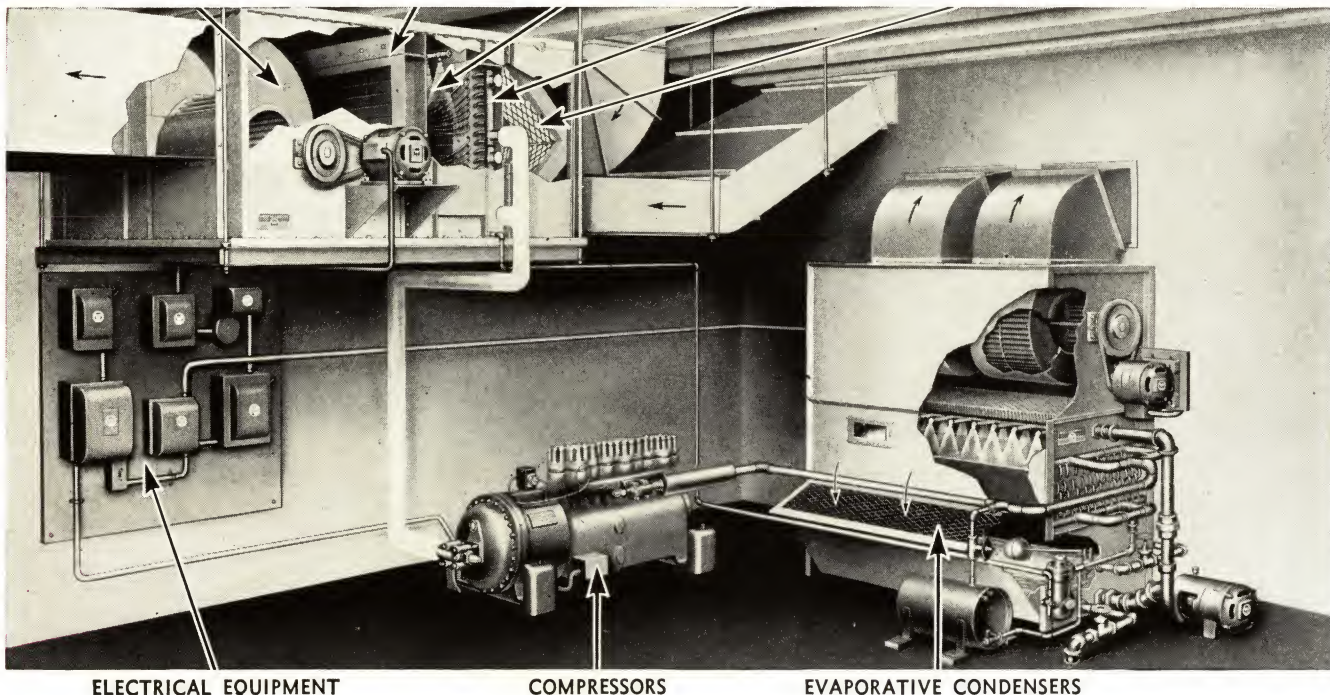
Westinghouse Planned Electrical Laundries meet the demand for a modern timesaving, stepsaving, money-saving Home Laundry. They are basically sound in design and flexible. Simply adapt a scale drawing to your plan and save yourself a lot of extra work.

Westinghouse Planned Electrical Laundries are low in cost, easy to install, and have the added appeal of Westinghouse *Home-proved* Washers and Ironers. Write Westinghouse Laundry Planning Department, Mansfield, Ohio, for co-operation on special planning problems. *No obligation.*



UNIFIED AIR CONDITIONING EQUIPMENT FOR COMMERCIAL BUILDING APPLICATIONS

AIR CONDITIONING UNITS HEATING SURFACES HUMIDIFIERS COOLING SURFACES FILTERS



APPLICATION

Westinghouse equipment provides air conditioning for every building application. Every unit is engineered by Westinghouse and matched in capacity and performance to operate in a Unified System.

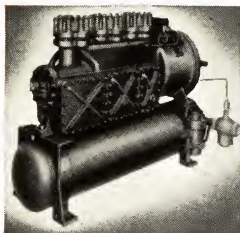
Self-contained equipment, factory-engineered and built, is available over a variety of sizes for small to medium-size spaces. For larger commercial spaces to be served by central systems, Westinghouse matched equipment is provided to meet any load requirement.

All Westinghouse Air Conditioning systems are applied in carefully engineered installations, with responsible maintenance service to assure continuing efficiency.

FEATURES

CONDENSING UNITS AND COMPRESSORS: Available in capacities from 1 to 100 tons. Exclusive Westinghouse Seal-less construction, without shaft seals, belts, pulleys or other visible moving parts. Extremely compact and light in weight, they

require unusually small floor space, and usually may be installed without the need for special foundations.



HEAT TRANSFER SURFACES: Cooling surfaces for Freon or cold water—heating surfaces for steam, hot water or vapor, are available in sizes to match all other Westinghouse equipment. Tubes and fins are of pure Lake copper, soldered together for permanent contact and efficiency. All joints in Freon surfaces are silver-soldered.

AIR CONDITIONING UNITS: Available both in horizontal and vertical types to fit all construction requirements. Sizes to fit all compressors in the line, and to take all matching cooling and/or heating surfaces. This unit incorporates the blower, heat-transfer surfaces, humidifiers, and filters.

EVAPORATIVE CONDENSERS: Evaporative condensers combine the performance of water-cooled condenser, air-cooled condensers and a cooling tower in one piece of equipment, cut down water consumption 95% to 98%. They are particularly valuable where city water is expensive, or its use restricted. Operating cost is lower than any other condensing method. Available in sizes to match all compressors in which water consumption is a factor.

ELECTRICAL EQUIPMENT: Linestarters, circuit breakers, switches, conduits, etc., are also available for every air conditioning requirement. See nearest Westinghouse office for details.



HOW TO SELECT

Fit equipment to meet the total B.t.u. load according to capacities under local conditions as listed on Westinghouse performance data sheets. Equipment is available to meet, without overpowering, yet with adequate margin of safety, every cooling and heating requirement. Your consulting engineer and your Westinghouse contractor can make these selections correctly and quickly by use of performance data sheets and other selective equipment (See "Where to Buy").

TYPICAL SPECIFICATIONS

The air conditioning equipment shall be a Westinghouse unified system, or equivalent, with all essential units bearing a single manufacturer's trade-mark.

The compressor shall be Westinghouse Model, or equivalent, of hp. capacity, of direct-drive construction, with positive pressure oil pump lubrication without shaft seals, pulleys, belts or chains, and with all moving parts completely sealed within a steel or cast-iron housing, immersion-tested for leaks under 200 lbs., per

sq. in., pressure, and run-tested for not less than four hours.

The cooling surfaces shall be Model, Westinghouse row coils, or equivalent, factory-matched to the above compressor.

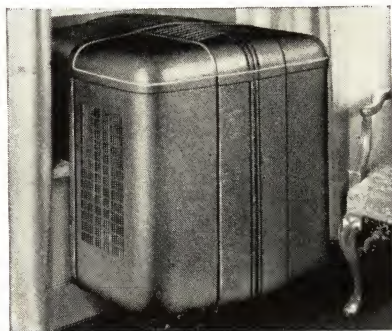
The evaporative condenser shall be a Model Westinghouse Aquamiser.

WHERE TO BUY

Contact your nearest Westinghouse District Sales Office (See list on pages 46 and 47); your local Westinghouse Authorized Air Conditioning Contractor (see your classified telephone directory); or address Westinghouse Air Conditioning Department, Springfield, Massachusetts. Write for the Westinghouse Architect's Data file, containing complete specifications and all necessary selection equipment.



SELF-CONTAINED SYSTEMS



THE MOBILAIRE—(Above)—the air-cooled model. (Below)—the water-cooled model.



THE UNITAIRE—complete, self-contained, air conditioning systems for installations requiring up to 30 tons capacity. (3-Ton Model Shown)

contained remote units connected to duct systems are available in single units of $7\frac{1}{2}$, 10 and 15 tons capacity. Combinations of any two units are practical, providing capacities of $17\frac{1}{2}$, $22\frac{1}{2}$, 25 and 30 tons. Heating coils and humidifiers may be added to all Unitaires to render them year-round systems.

FEATURES

All Westinghouse Unitaires are engineered, built and thoroughly tested at the factory, and shipped ready for installation. Power, water, drain, and duct connections complete installations. All refrigeration engineering on the job is eliminated.

HOW TO SELECT

Fit equipment to total B.t.u. load according to capacities under local conditions as listed in Westinghouse performance data sheets. (See "Where to Buy," above.)

TYPICAL SPECIFICATIONS

The air conditioning system shall consist of Model Westinghouse Unitaires of hp. capacity each, or equivalent, containing hermetically-sealed condensing unit, constructed without shaft seals, belts, pulleys, gears, or chains, and with all matching equipment completely installed, factory-tested and approved.

WHERE TO BUY

See "Where to Buy" on this page, above.

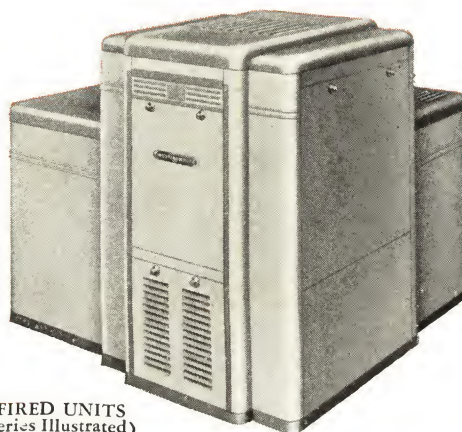
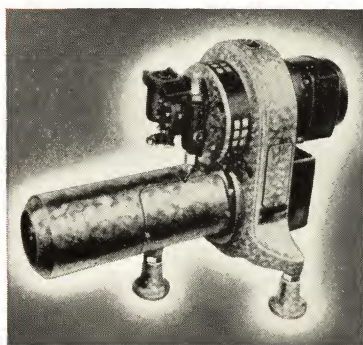
APPLICATION

Small to medium-sized spaces requiring up to 30 tons cooling capacity may be served with Westinghouse Unitaires. For smaller applications, 1 to 5 ton room units suffice. Over 5 tons, self-



HOME HEATING AND AIR CONDITIONING UNITS

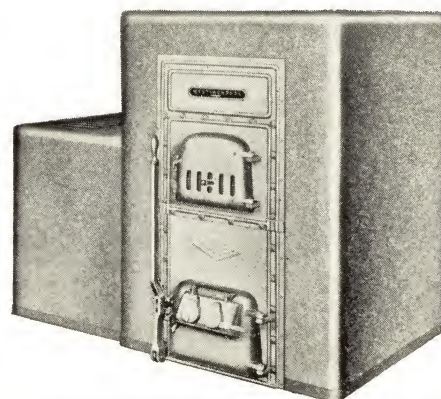
OIL-FIRED UNITS (1100 Series Illustrated)

GAS-FIRED UNITS
("D" Series Illustrated)

CONVERSION OIL BURNER (G Series)



COOLING UNIT (RU-90)



COAL-FIRED UNITS (5500 Series Illustrated)

APPLICATION

Modern, automatic heating for the modern home, small, medium-size or large, is available in the Westinghouse Home Heating and Air Conditioning line. And summer cooling and dehumidifying may be added to any system with the RU-90 cooling unit. It is installed in the supply duct, and circulated air in summer passes through the heat-transfer surface where it is cooled and dehumidified.

FEATURES

The broadly inclusive nature of the Westinghouse heating line is readily apparent in the following:

There are four different types of gas-fired units; two types are direct gas-fired winter air conditioning systems, each in a range of four sizes, the other in two sizes. Two types of direct oil-fired units, one type available in three sizes, the other in six sizes. Three types of coal-fired units, two in four sizes, one in five sizes, three types adaptable for stoker applications. Two sizes of Conversion Oil Burners, one cooling-dehumidifying unit for installation in the supply duct of any forced-air system. Automatic controls are available for all lines.

HOW TO SELECT

Choose the series type as to type of fuel preferred, type of equipment preferred, then select the size to meet the total B.t.u. load requirements. Ask for West-

inghouse Home-Comfort Application Manual for complete and detailed selection data. (See "Where to Buy" below.)

TYPICAL SPECIFICATIONS

The Winter Air Conditioning Equipment on this installation shall be a Westinghouse De Luxe Winter Air Conditioning fired unit capable of delivering B.t.u. at register with a blower capacity of CFM, or equivalent. The motor must be of suitable horse power to deliver this volume of air against $\frac{1}{2}$ in. static pressure.

The trunk velocity must not exceed 650 FPM in the main ducts and 500 FPM in the risers, branches and registers.

All registers are to be 1 ft. 6 in. below ceiling with adjustable louvers.

The Summer Air Conditioning Equipment shall be a Westinghouse "Factory Sealed Refrigerant Cycle" Unit capable of reducing the temperature 12° F., when the outside temperature is 95° , and $\frac{1}{3}$ of the air circulated is outside air, or equivalent.

WHERE TO BUY

Contact your nearest Westinghouse District Sales Office (see list on pages 46-47); your local Westinghouse Home Heating and Air Conditioning Dealer (see your classified telephone directory); or address Westinghouse Air Conditioning Departments, Springfield, Mass.



WESTINGHOUSE WATER COOLERS

THRIFT WATER
COOLER
(Bottle Type)THRIFT WATER
COOLER
(Bubbler Type)AIRLINE WATER
COOLERMICARTA
WATER COOLERSTREAMLINE
WATER COOLEREXPLOSION-PROOF
WATER COOLER

APPLICATION

THRIFT MODELS—Recommended for small offices. Bottle type and pressure types for cup or bubbler service; not equipped for remote bubbler service.

AIRLINE MODELS—For use where demands are moderate and operating conditions normal such as in offices, reception rooms, public buildings, etc.

MICARTA MODEL—For exclusive smartness . . . as in clubs, hotels, executive offices and fashionable stores.

STREAMLINE MODELS—Ideal for factories where demands are great and operating conditions are severe.

EXPLOSION-PROOF MODELS—Recommended for powder mills, airplane hangars, oil refineries, flour mills, paint factories, textile mills or chemical laboratories where explosion-proof equipment is a necessity.

FEATURES

HERMETICALLY-SEALED UNIT—All Westinghouse Water Cooler Units are Hermetically-sealed inside an airtight case of solid steel. No dust, dirt or moisture can ever harm the working parts.

FIVE YEAR PROTECTION PLAN—Because the unit is Hermetically sealed, Westinghouse can and does provide five years protection on the Hermetically Sealed-in mechanism.

EXCLUSIVE STAINLESS STEEL TOP—On Streamline and Airline Series.

ALL STEEL CABINET

NON-CLOG DRAINS

IMPROVED HIGH EFFICIENCY COOLING CHAMBER

7 POINT TEMPERATURE SELECTOR

HOW TO SELECT

Use Table "A" to determine the required capacity in gallons per hour of 50° F. outlet water.

In Table "B" under the probable water temperature at the cooler location, select a cooler that has the required capacity in gallons per hour which also meets the appearance and application requirements.

In many cases it will be necessary to use two small coolers instead of one high capacity unit, to decrease the distance to be traveled to a cooler or to limit the number of people per cooler to 150.

TYPICAL SPECIFICATIONS

Water cooler shall be self-contained with compressor, cooling tank, etc., enclosed within the cabinet. The refrigerating unit shall be a water or air-cooled, electrically driven, automatically controlled machine. The motor shall be suitable for use on . . . volt, . . . cycle single phase current.

The water cooler shall have a capacity to cool . . . gallons of water per hour from 80° F. inlet temperature to 50° F. outlet temperature. This capacity shall be based on two thirds of the water being wasted to the cooler drain.

TABLE "A"

Type of Service	Delivered Water Temp. Fahr.	Gals. Per Person Per Hr.	Waste and Consumption Per Person Per Hour-Ozs.	Consumption Only Per Person Per Hour Ounces	People Served Per Gallon
Office (Cup).....	45-50	.033	4.2	4.2	30
Office (Bubbler).....	45-50	.083	10.5	4.2	12
Light Manufacturing..	45-50	.143	18.3	7.32	7
Heavy Manufacturing..	50-55	.20	25.6	10.24	5
Hot Heavy Manufacturing.....	55-60	.25	32.0	12.8	4
Restaurant.....	40-45		.1 Gallon per Person		
Cafeteria.....	40-45		.083 Gallon per Person		
Theatre (Movie).....	45-50		1.0 Gallon per 100 Seats		
Theatre (Legitimate)...	45-50		1.0 Gallon per 100 Seats Continuous Capacity		
Schools.....	45-50		Each Fountain shall have Storage Capacity to provide 5 Gallons in 10 Minutes		
Hospitals			Requirements per Person—Same as Office		
A. per Bed.....	45-50		.083 Gallon		
B. per Attendant....	45-50		.083 Gallon		
Hotels.....	45-50		.08 Gallon per Hour per Room		
Public Fountains (Amusement Parks, Fairs, etc.).....	45-50		20 to 35 Gallons per Hour		
Department Stores....	45-50		4 to 5 Gallons per Hour per Fountain		
Hotels and Office Building Lobbies					

TABLE "B" RATINGS, WEIGHTS, DIMENSIONS, ETC.

	Model	Type	Voltage	Frequency (Cycles)	Height	Width	Depth	Weight	Finish	Capacity Gal. Per Hour 80° Room—50° Outlet				
										Inlet Water Temperatures				
										60°	70°	80°	90°	100°
Thrift	LB-3	Bottle	115	60	40 ³ / ₄ "	15 ⁵ / ₁₆ "	22 ¹ / ₈ "	130	Black Wrinkle	12.0	5.6	3.4	2.3	1.8
	LP-3	Pressure	115	60	41"	15 ⁵ / ₁₆ "	22 ¹ / ₈ "	144	Black Wrinkle	9.8	5.1	3.4	2.6	2.1
	LPX-3	Bubbler	115	60	43 ¹ / ₈ "	15 ⁵ / ₁₆ "	15 ¹ / ₄ "	151	Black Wrinkle	11.5	6.0	4.1	3.1	2.1
	LPO-3	Pressure	115	D.C.	41 ³ / ₈ "	15 ⁵ / ₁₆ "	19 ¹ / ₄ "	147	Black Wrinkle	8.0	4.2	2.8	2.1	1.7
	LBO-3	Bottle	115	D.C.	41 ¹ / ₈ "	15 ⁵ / ₁₆ "	19 ¹ / ₄ "	147	Black Wrinkle	9.7	4.5	2.8	1.9	1.5
	LP-325	Pressure	115	25	41"	15 ⁵ / ₁₆ "	22 ¹ / ₈ "	130	Black Wrinkle	8.2	4.3	2.8	2.2	1.8
	LB-325	Bottle	115	25	40 ³ / ₄ "	15 ⁵ / ₁₆ "	22 ¹ / ₈ "	130	Black Wrinkle	10.0	4.7	2.8	1.9	1.5
	LPXO-3	Pressure	115	D.C.	43 ¹ / ₈ "	15 ⁵ / ₁₆ "	15 ¹ / ₄ "	167	Black Wrinkle	10.6	5.3	3.5	2.7	2.2
	LPX-325	Pressure	115	25	43 ¹ / ₈ "	15 ⁵ / ₁₆ "	15 ¹ / ₄ "	160	Black Wrinkle	9.0	5.0	3.4	2.6	2.1
Air Line	P-5	Pressure	115	60	42 ¹ / ₈ "	15 ⁵ / ₁₆ "	15 ¹⁵ / ₁₆ "	162	Black Dulux	13.0	7.2	4.8	3.9	3.2
	P-8	Pressure	115	60	42 ¹ / ₂ "	15 ⁵ / ₁₆ "	15 ¹⁵ / ₁₆ "	181	Black Dulux	21.7	11.5	8.0	6.4	5.3
Micarta	MT-8	Pressure	115	60 or 25	43"	18 ⁷ / ₈ "	18 ⁷ / ₈ "	236	Black Micarta	17.0	10.0	7.1	5.3	4.2
Stream-line	WP-925	Pressure	115	25	42 ⁹ / ₁₆ "	15 ³ / ₄ "	15 ⁵ / ₁₆ "	169	Black Dulux	23.8	12.6	8.2	6.1	4.9
	WP-10	Pressure	115	60	42 ⁹ / ₁₆ "	15 ³ / ₄ "	15 ⁵ / ₁₆ "	165	Black Dulux	30.1	15.1	9.8	7.5	5.9
	WP-19	Pressure	115	60	42 ⁹ / ₁₆ "	15 ³ / ₄ "	15 ⁵ / ₁₆ "	207	Black Dulux	56.0	28.8	18.9	14.1	11.1
Explosion Proof	WPE-925	Pressure	115	25	42 ⁹ / ₁₆ "	21"	16 ¹ / ₈ "	189	Black Dulux	23.8	12.6	8.2	6.1	4.9
	WPE-10	Pressure	115	60	42 ⁹ / ₁₆ "	21"	16 ¹ / ₈ "	189	Black Dulux	30.1	15.1	9.8	7.5	5.9
	WPE-19	Pressure	115	60	42 ⁹ / ₁₆ "	21"	16 ¹ / ₈ "	216	Black Dulux	56.0	28.8	18.9	14.1	11.1

*Coolers rated for 60 cycles, 115 volts also operate at 50 cycles, 100 volts.

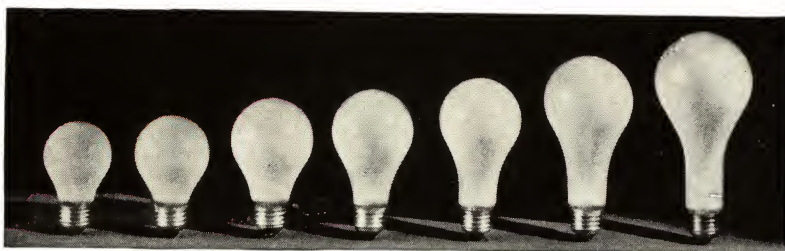
WHERE TO BUY

Refer to your nearest Westinghouse Electric Supply Company or Westinghouse Distributor. See list on pages 46 and 47.

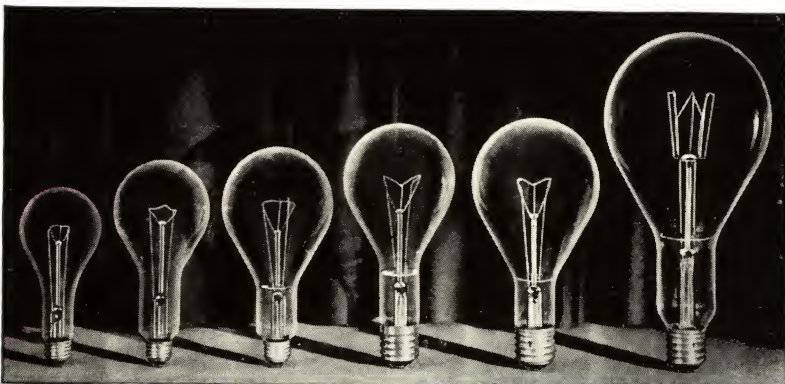


WESTINGHOUSE MAZDA LAMPS

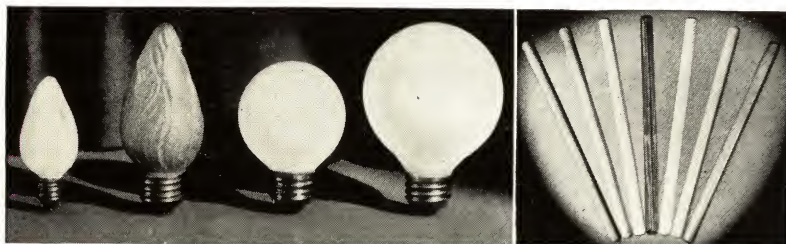
LARGE MAZDA LAMPS AND TYPE D LAMPS



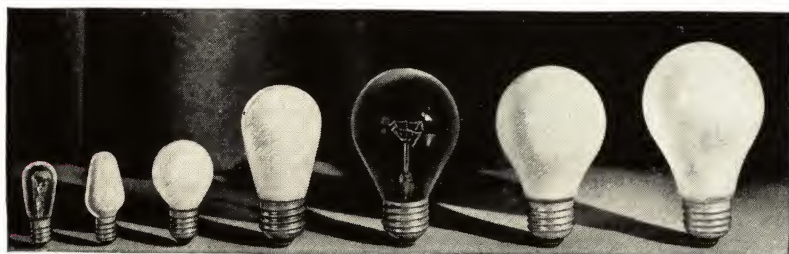
Watts 15 25 40 50 and 60 75 100 150



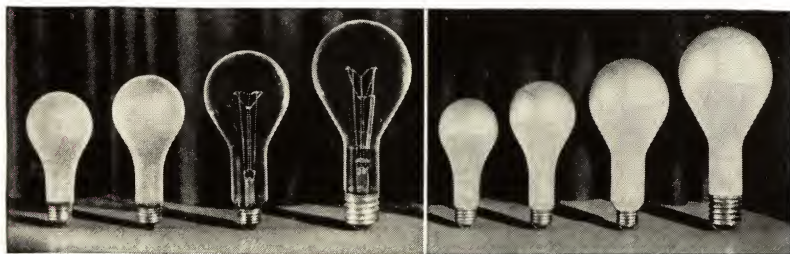
Watts 150 200 300 (Med.) 300 (Mogul) 500 1000



Watts 15 25 25 25 and 40 30 and 60 Lumiline



Watts 6 7 10 6 and 10 25 and 50 25 40



Watts 100 150 200 300
MAZDA DAYLIGHT LAMPS

100 150 200 300
SILVERED BOWL MAZDA LAMPS

STANDARD LINE

For prices see Westinghouse Mazda
Lamp Price Schedule

GENERAL LIGHTING SERVICE 110, 115, 120 Volts

APPLICATIONS—These lamps fulfill 65% of requirements for homes, stores, offices, schools and factories, will operate in any burning position, should be protected against moisture when used outdoors.

FINISHES—INSIDE FROSTED finish on 15 to 500 watt sizes reduces glare, aids diffusion. Light output rated same as for clear glass. WHITE BOWL finish on 150 to 1500 watt sizes absorbs 3% of light, is recommended for open-type fixtures where lamp burns base up. CLEAR finish available on 150 to 1500 watt sizes.

BASES—MEDIUM SCREW base on sizes up to 300 watts, MOGUL SCREW base on all others. MEDIUM BIPOST base on new 1000 watt lamp in small size T bulb.

DECORATIVE AND LUMILINE LAMPS 110, 115, 120 Volts

Decorative lamps are designed for ornamental fixtures where shape of the bulb is related to the design of the luminaire. Lumiline lamps have contact caps at each end which fit into specially designed sockets and are ideal for built-in and decorative lighting.

SIGN AND DECORATIVE LIGHTING SERVICE

110, 115, 120 Volts

APPLICATION—For outdoor exposed signs, colored festoons and similar decorative lighting.

BASES—6 watt (clear) and 7 watt lamps have candelabra bases; 10 watt lamp has intermediate base. All others have medium bases. See Lamp catalog for finishes and colors.

MAZDA DAYLIGHT AND SILVERED BOWL LAMPS

110, 115, 120 Volts

Mazda Daylight lamps have blue bulbs, give light approaching daylight quality. 60 and 100 watt sizes made only with Inside Frosted finish, 150 to 500 sizes both Inside Frosted and Clear. Silvered Bowl lamps have a permanent coating of mirror silver on the bowl which shields direct filament rays and acts as a reflector. Sizes: 60 to 500 watts.



WESTINGHOUSE MAZDA LAMPS

LARGE MAZDA LAMPS AND TYPE D LAMPS—Continued

MAZDA THREE-LITE LAMPS

110, 115, 120 Volts

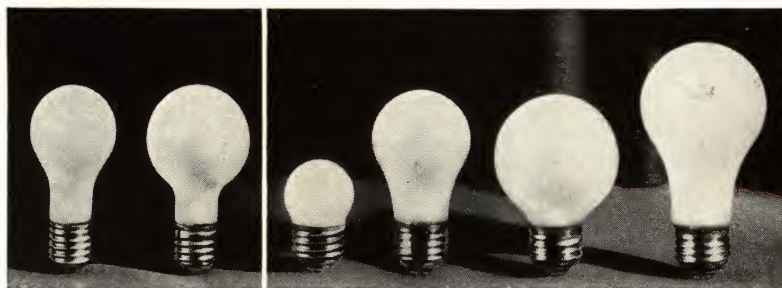
The two filaments lighted separately or together give 3 levels of light.

SIZES—50-100-150, 100-200-300 watts.

TYPE D (NON-MAZDA) LAMPS

110, 115, 120 Volts

These are high quality lamps of proven efficiency and performance. They are not Mazda lamps. 30 watt lamp is made also in colors.



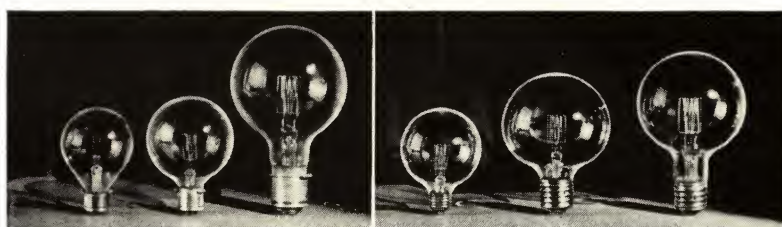
50-100-150 100-200-300
THREE-LITE LAMPS

7 1/2 15 30 60 Watts
TYPE D LAMPS

SPOTLIGHT LAMPS

110, 115, 120 Volts

SIZES—100, 250, 400 and 1000 watts. 1000 watt lamp has MOGUL PREFOCUS base; all others have MEDIUM PREFOCUS base.



FLOODLIGHTING LAMPS

110, 115, 120 Volts

SIZES—250, 500 and 1000 watts. All lamps have concentrated filaments.

SODIUM VAPOR LAMPS

APPLICATIONS—For highway lighting.

CHARACTERISTICS—The visible light produced is yellow in color, monochromatic and cannot be changed by filters. Lamps give most satisfactory performance when burned in specified position. They are not Mazda Lamps.

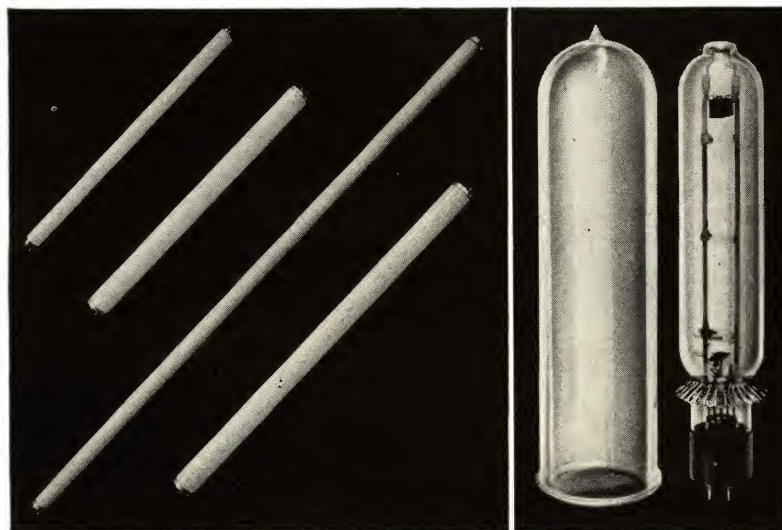
SIZES—6,000 and 10,000 lumens.

FLUORESCENT LUMILINE LAMP

APPLICATIONS—Modern colored lighting effects for theaters, exhibits, show rooms and light of daylight quality where color discrimination is a factor.

CHARACTERISTICS—These lamps give more light than comparable ordinary Mazda lamps and are cooler than lamps of the same lumen output. Must operate in conjunction with special control equipment.

SIZES—15, 20, 30 watts.



15 15 30 20 Watt
FLUORESCENT LUMILINE LAMPS

10,000 LUMEN SODIUM
VAPOR LAMP WITH
VACUUM FLASH

PROJECTOR—REFLECTOR LAMPS

APPLICATIONS—Projector Lamps—For indoor or outdoor use spotlighting or floodlighting signs, exhibits, filling stations, show windows. Also for supplementary lighting in factories, stores, etc.

Reflector Lamps—For indoor use only, to spotlight windows, displays, exhibits, etc.

CHARACTERISTICS—These lamps combine filament, reflector and lens all in one lamp, assuring accurate focus and permanent reflector efficiency.

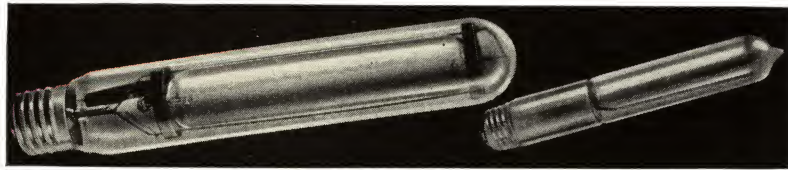
SIZES—150 watts each.



PROJECTOR SPOT

PROJECTOR FLOOD

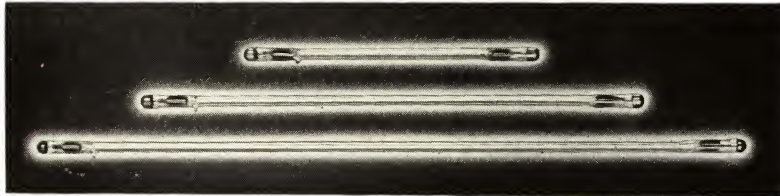
REFLECTOR

WESTINGHOUSE MAZDA LAMPS**LARGE MAZDA LAMPS AND TYPE D LAMPS—Continued**

Watts

400

250



Inches

10, 20, 30

**HIGH VOLTAGE LAMPS****220, 230, 240, 250, 260 Volts**

These are available in sizes from 25 to 1000 watts. For base sizes and finishes see Lamp Catalog.

TUBULAR LAMPS**110, 115, 120 Volts**

These lamps are made with Medium screw bases in 25 and 40 watt sizes clear.

MERCURY VAPOR LAMPS

These lamps require special equipment for their use. Because of the color quality of light produced they are applicable to many industrial and commercial uses. They are not Mazda Lamps.

STERILAMPS*

Westinghouse Sterilamps produce bactericidal ultra-violet radiations, are used to reduce contamination from air-borne bacteria in meat refrigerators, refrigerated show cases, bakeries, hospitals and in the sterilization of drinking glasses used in public places. They are not Mazda Lamps.

VIBRATION AND ROUGH SERVICE LAMPS**110, 115, 120 Volts**

APPLICATION—The 50-watt Vibration lamp is designed to withstand high-frequency vibration such as is found on high-speed machines. This lamp has a clear bulb. 50 and 100 watt Rough Service lamps are Inside Frosted, and are designed for extension cord use, etc.

MAZDA LAMPS FOR EVERY PURPOSE

To meet specialized services, thousands of types of MAZDA lamps—not listed in this Catalog—are available. Only a partial list of special lamp services is given below—for full information on any special lamp or lighting service, consult the nearest Westinghouse Lamp Division Sales Office. Complete study of each specific problem and cooperation between equipment and lamp designers are necessary to insure the proper characteristics of the lamp for most satisfactory performance.

Advertising Projector

Altimeter Lamp

Annunciator

Bake Oven

Barrel Inspection

Battery Inspection

Berthlight

Code Beacon

Deep Sea Underwater Floodlight

Dentoscope

Distilling Tube Inspection

Diving Lamp

Electrocardiograph

Elevator Signal

Emergency Exit

Fire Alarm Signal

Fire and Police Hand Lantern

Furnace Indicator

Galvanometer

High Speed Signal

Lighthouse

Lightship

Marine Signal

Motorboat

On-course Beacon

Ophthalmometer

Oscillograph

Photocell Exciter

Photographic

Photometric Standards

Photophone Recorder

Pilot Balloon Observation

Pilot Lamp for Rectifier

Plant Research

Police Signal

Pyrometer

Radio Circuit—Resonance Illuminator Indicator

Radio Picture Transmission

Radio Protector

Railway Light Signal

Recording Microphotometer

Rectifier (Street Series)

Resistance

Scientific Instrument

Seismometric Recording Apparatus

Sensitometer

Spectrograph

Sperry Gyroscope

Studio Effect Lighting

Subway Door Indicator

Surgical

Switchboard

Target Projection

Telephone Trouble

Ultraviolet Transmitting Bulb Lamps

X-ray Illuminator

X-ray Instrument

* TRADEMARK REG. U. S. PATENT OFFICE



OTHER WESTINGHOUSE PRODUCTS FOR BUILDINGS

For complete information see the nearest Westinghouse office listed on pages 46-47 or other source mentioned below.

CUBICLE TYPE SWITCHGEAR—For incoming lines and feeders of 2300 to 15,000 volts, indoor cubicles provide complete factory assembled, steel enclosed, safety type switching equipment at minimum expense. Also used for distribution substations and providing control for motors. The units are for either manually or electrically-operated circuit breakers and may be equipped with automatic reclosing relays, if electrically operated, which will reclose the circuit breaker a definite number of times on a predetermined schedule.

METAL CLAD SWITCHGEAR—Essentially the same as cubicle type switchgear, metal-clad is equipped with removable breakers which may be easily and quickly replaced with a spare unit. Especially desirable where it is important that service be maintained during inspection and maintenance of the breakers.

LOW VOLTAGE DISTRIBUTION SWITCHBOARDS—For distribution of secondary electrical energy for power and lighting circuits of 600 volts a-c. or 250 volts d-c.

ENGINE DRIVEN GENERATORS—For use where low speed gas, oil or steam engines are used to generate electrical energy. Available in sizes ranging from 25 to 8000 Kw., at commercial voltages from 240 to 13,800 volts, 1, 2 and 3 phase, 25, 50 or 60 cycles and speeds from 100 r.p.m. and up.

GENERATOR SWITCHBOARDS—Provide an inexpensive means for operation of generators and exciters of 480, 600 and 2400 volts and where the total connected generator capacity does not exceed 5000 kv-a. at 2400 volts.

FEEDER SWITCHBOARDS—For controlling incoming lines, transformer feeders and outgoing lines of 480, 600 and 2400 volts. Used for general power and lighting service in buildings where the total feeding capacity does not exceed 5000 kv-a. at 2400 volts.

MOTOR GENERATORS—A complete line of motor generator sets are available for battery charging generator excitation, radio applications, etc.

BELL RINGING TRANSFORMERS—For such applications as doorbell, buzzer, door-opener and annunciator service in houses, small apartments, business establishments, etc. Available in primary voltages of 100/120 and 200/240 volts with secondary voltage of 6-8-10-12 volts. Frequencies are 50/133 and 25/40 cycles.

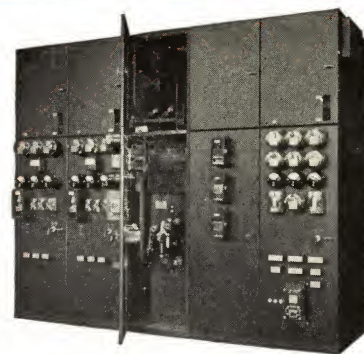
LIGHTNING ARRESTERS—For the protection of outdoor mounted conventional transformers against lightning. Available in voltage ratings from 3000 volts up to 73,000 volts.

INSTRUMENTS—A complete line of ammeters, voltmeters, wattmeters, recorders and special instruments for switchboard mounting, portable service and the new socket applications. With socket instruments install an inexpensive socket in each circuit or on each machine. Then plug in any socket ammeter, voltmeter or wattmeter, as easily as plugging in a floor lamp.

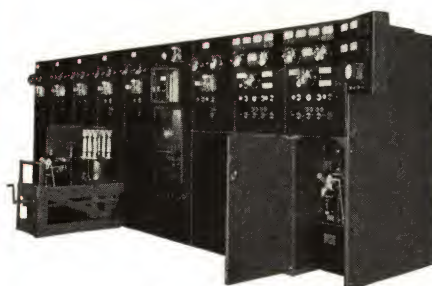
METERS—Either detachable or conventional type watt-hour meters for single phase or polyphase service. Standard meters are available in capacities of 5, 15 and 50 amperes but will take care of infrequent peak loads up to three hundred per cent of rating without loss of accuracy.

CURRENT AND POTENTIAL TRANSFORMERS—A complete line of indoor and outdoor current and potential transformers are available for metering, relaying, and switching applications.

CUBICLE
SWITCHGEAR



METAL CLAD
SWITCHGEAR



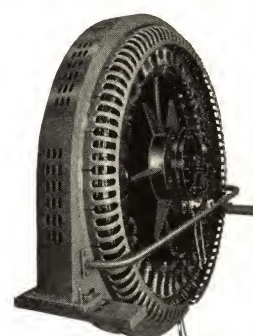
LOW VOLTAGE
DISTRIBUTION SWITCHBOARD



GENERATOR
SWITCHBOARD



FEEDER
SWITCHBOARD



ENGINE GENERATOR

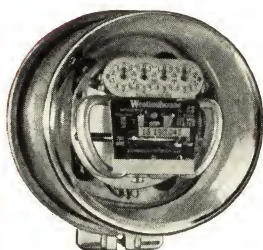


CSP
TRANSFORMER

OTHER WESTINGHOUSE PRODUCTS FOR BUILDINGS—Continued

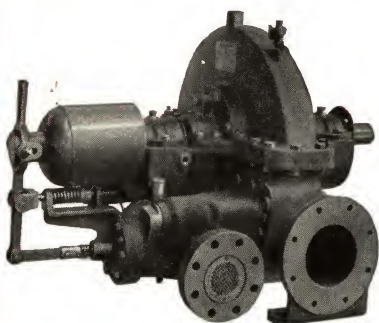


SOCKET-TYPE AMMETER

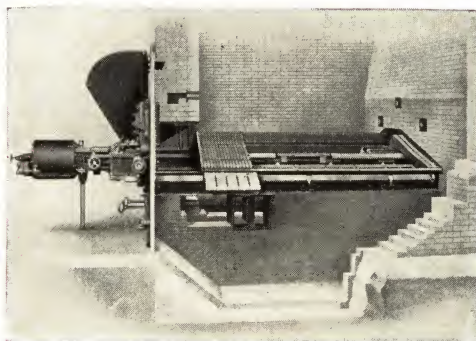


METER

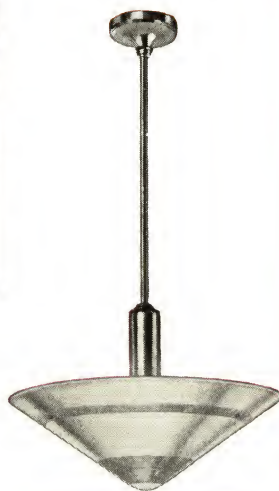
BATTERY CHARGER



STEAM TURBINE



STOKER



LIGHTING FIXTURES



DISTRIBUTION TRANSFORMERS—For use where the owner of a building purchases power at high voltages. Six types are available: (1) Conventional Transformers for indoor mounting in fire-proof vaults or for outdoor mounting. Lightning protection provided by separate arresters and cutouts. (2) SP Surge Protected Transformers for outdoor mounting where built-in lightning protection only is desired. (3) CSP Completely Self-Protecting Transformers for outdoor mounting where built-in lightning and overload protection is desired. (4) Inerteen Filled Transformers for indoor applications eliminate the necessity for fire-proof vaults. (5) SM Subway Type for underground mounting in manholes where dampness is prevalent. (6) Network Transformers for use on low-voltage network systems. Available in either non-submersible or submersible water-tight designs.

STOKERS—Single Retort Stokers are available for boiler requirements ranging from 100 to 500 horsepower. Multiple Retort Stokers are designed for heavy duty service where boilers range from 300 horsepower up.

TURBINES—A complete line for driving boiler, feeder and fire pumps, induced or forced-draft fans and similar apparatus. Also for direct connection to generators for power supply. Ratings from 5 horsepower up.

BATTERY CHARGERS—A trouble-free line of Rectox battery chargers with no moving parts, no liquids and no chemicals. Invaluable for keeping batteries fully charged at all times.

ELEVATORS—Westinghouse manufactures a complete line of elevators and electric stairways in a wide range of capacities and speeds to meet the application. Call the nearest Westinghouse Elevator Company office for complete information.

LIGHTING—A complete line of flood, commercial, industrial, street and aviation lighting equipment is available. For more detailed information on commercial and industrial lighting see Section 24 of Sweet's Catalog File for the Building Market. For further information consult the Westinghouse representative.

PRECIPITRON—A simple, but highly efficient dust precipitator which, with a pressure drop not exceeding $\frac{1}{10}$ inch of water, will remove more than 90% of all solid matter from air or gases regardless of the size of the particles. It is particularly adaptable for use with heating, ventilating and air conditioning systems.

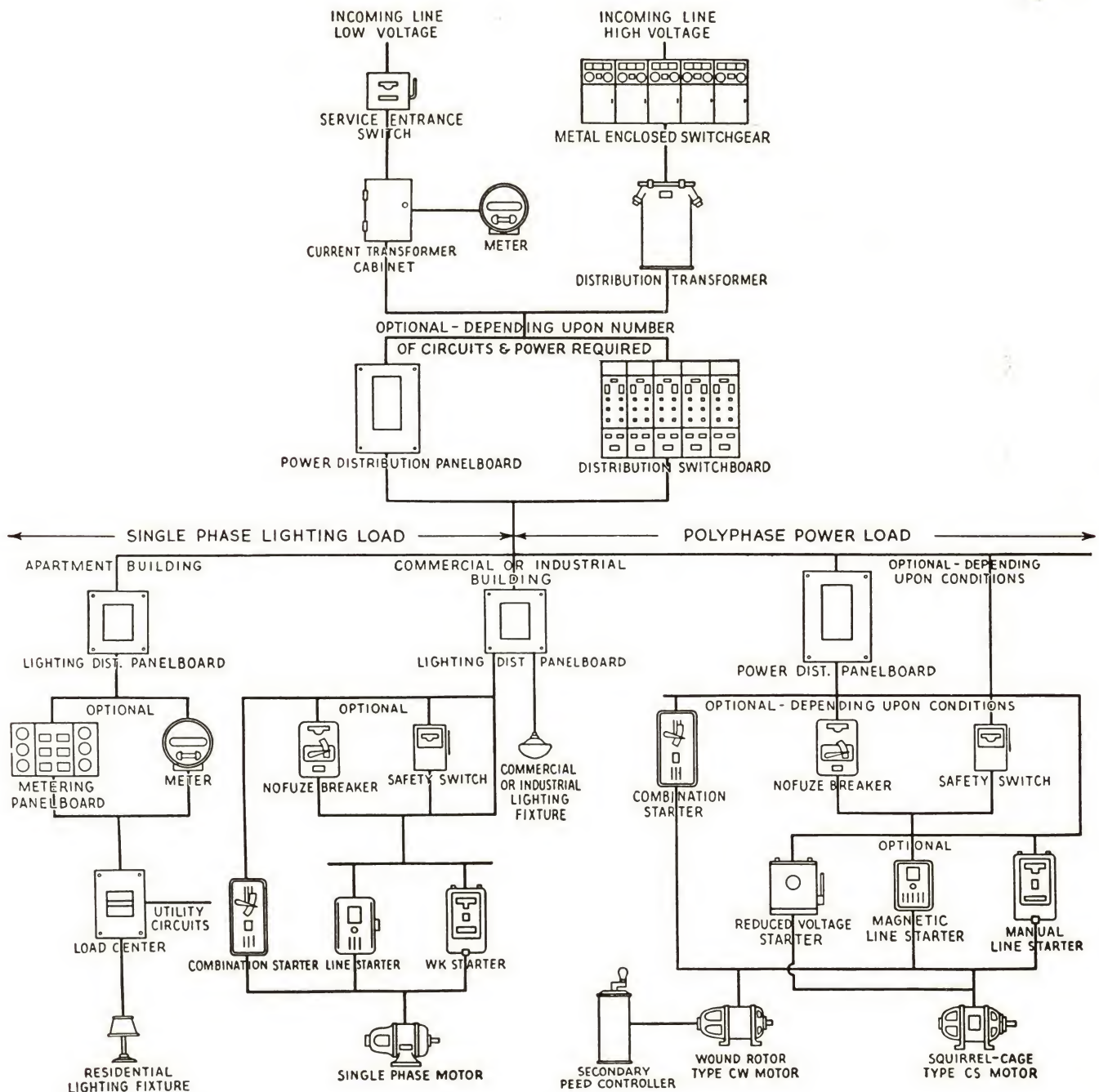
MICARTA—A laminated plastic material unequalled for wall paneling, bar, sink, counter and table tops, window sills, kick plates and partitions. Strong, durable . . . doesn't break, splinter or chip . . . unaffected by alcoholic liquors, weak acids, alkalies or smouldering cigarettes, it is available in twenty-two colors, any two of which assure full harmony or complete contrast. Can be furnished in brilliant glossy or soft satin finish. For more detailed information and full color reproductions of designs, see Section 11 of Sweet's Catalog File for the Building Market.

WIRING DEVICES—A complete line of 2, 3 and 4 way wall switches, convenience outlets, clock outlets, fan hangers and other wiring devices are made by the Bryant Electric Company. See Section 23 of Sweet's Catalog File for the Building Market for more complete information.

X-RAY—A complete line of equipment for X-Ray diagnosis and treatment is manufactured by the Westinghouse X-Ray Company. Consult their nearest office, listed on the back cover, for information regarding this equipment, and its voltage and current ratings.



DIAGRAM SHOWING WESTINGHOUSE EQUIPMENT FOR THE DISTRIBUTION, CONTROL AND UTILIZATION OF ELECTRICAL ENERGY



The diagram above will sum up the application of various Westinghouse Equipment described throughout this catalog. Quite naturally one diagram cannot cover every phase of usage or combination of units. However—the flow of current from incoming line to eventual usage is indicated for small as well as large installations.

Westinghouse will be glad to cooperate with architects in the solution of any electrical problems. On pages 46 and 47 of this catalog will be found complete listing of branch offices, agent jobbers, etc. There is one in your area—write direct for specific data.



WESTINGHOUSE ELECTRIC & MANUFACTURING CO.

BUSINESS ADDRESSES
Headquarters, Pittsburgh, Pa.

- *AKRON, OHIO, 106 South Main St.
*ALBANY, N. Y., 456 No. Pearl St.
*ALEXANDRIA, VA., 121 Frazier Ave.
*ALLEN TOWN, PA., 522 Maple St.
*AMARILLO, TEXAS, 1401-A Fillmore St.
*APPLETON, WISC., 1708 N. Drew St., P. O. Box 206
†APPLETON, WISC., 1029 So. Outagamie St.
*†ATLANTA, GA., 426 Marietta St., N. W.
*ATTICA, N. Y.
*BAKERSFIELD, CALIF., 2224 San Emedio St.
*BALTIMORE, MD., 118 E. Lombard St.
①†BALTIMORE, MD., 501 East Preston Road
*BALTIMORE, MD., 40 S. Calvert St.
①*BALTIMORE, MD., 2519 Wilkens Ave.
①*BEAUMONT, TEXAS, 875 21st St., P. O. Box 2367
*BINGHAMTON, N. Y., Suite 704, Marine Midland Bldg., 86 Court St.
*BIRMINGHAM, ALA., 2030 Second Ave.
*BLUEFIELD, W. VA., 208 Bluefield Avenue
*BOISE, IDAHO, P. O. Box 1597
*BOSTON, MASS., 10 High St.
†BOSTON, MASS., 235 Old Colony Ave., So. Boston, Mass.
*†BRIDGEPORT, CONN., Bruce Ave. & Seymour St.
*BUFFALO, N. Y., 814 Ellicott Square Bldg.
†BUFFALO, N. Y., 1132 Seneca St.
*BURLINGTON, VER., 207 Park Ave.
*BUTTE, MONTANA, 129 West Park St.
①*BUTTE, MONTANA, 742 Bryant Ave.
*CANTON, OHIO, 120 W. Tuscarawas St.
*CEDAR RAPIDS, IOWA, 813 18th St., S.E., P. O. Box 148
*†CHARLOTTE, N. C., 210 East Sixth St.
*CHARLESTON, W. VA., 1415 Oakmont Rd., P. O. Box 865
*CHATTANOOGA, TENN., 536 Market St.
*CHICAGO, ILL., 20 N. Wacker Drive
†CHICAGO, ILL., 2211 W. Pershing Road
*CHICOPPEE FALLS, MASSACHUSETTS
*†CINCINNATI, OHIO, 207 West Third St.
*†CLEVELAND, OHIO, 1216 W. Fifty-Eighth St.
*COLUMBIA, S. C., 912 Lady St.
*COLUMBUS, OHIO, 85 E. Gay St.
*DALLAS, TEXAS, 209 Browder St.
*DALLAS, TEXAS, 1712 Laws St.
*DAVENPORT, IOWA, 206 E. Second St.
*DAYTON, OHIO, 30 North Main St.
*DENVER, COLORADO, 910 Fifteenth St.
*DENVER, COLORADO, 1700 Sixteenth St.
†DENVER, COLORADO, 988 Cherokee St.
*DENVER, COLORADO, Gas & Elec. Bldg.
*DERRY, PA.
*DES MOINES, IOWA, 1400-1408 Walnut St.
*†DETROIT, MICH., 5757 Trumbull Ave., P. O. Box 828
*DULUTH, MINN., 10 East Superior St.
*EAST PEORIA, ILL., 900 W. Washington St.
*EAST PITTSBURGH, PA.
*EL PASO, TEXAS, Oregon and Mills Sts.
*EL PASO, TEXAS, 450 Canal St.
*EL PASO, TEX., c/o Zork Hdwe. Co., 309 N. El Paso St.
*†EMERYVILLE, CALIF., 1466 Powell St.
- ①*EMERYVILLE, CALIF., 6121 Green St.
*ERIE, PA., 1003 State St.
*EVANSVILLE, IND., 201 N. W. First St.
*FAIRMONT, W. VA., 602 Cleveland Ave.
*FARGO, N. D., 520-3rd Ave. N.
*FORT WAYNE, IND., 1010 Packard Ave.
*FORT WORTH, TEXAS, 501 Jones St.
*FRESNO, CALIF., 872 Peralta Way, P. O. Box 632
*GARY, IND., 846 Broadway
*GRAND RAPIDS, MICH., 511 Monroe Ave. N. W.
①*GREENSBORO, N. C., N. Elm St. Apartments Apartment N-1 P. O. Box 1828
①*GREENVILLE, S. C., 110 W. Tallulah Drive, P. O. Box 1591
*HAMMOND, IND., 235 167th St.
*HARTFORD, CONN., Main & Pearl Sts., P. O. Box 745
*HONOLULU, T. H., Hawaiian Elec. Co. Agt.
*HOUSTON, TEXAS, 1314 Texas Ave.
*HOUSTON, TEXAS, 2313 Commerce Ave.
*HOUSTON, TEXAS, 2315 Commerce Ave.
*HOUSTON, TEXAS, 611-15 Petroleum Bldg.
*†HUNTINGTON, W. VA., 1029 Seventh Ave.
*INDIANAPOLIS, IND., 137 S. Penna. Ave.
*INDIANAPOLIS, IND., 551 West Merrill St.
*ISHPEMING, MICH., 433 High St.
*JACKSON, MICH., 212 West Michigan Ave.
*JOHNSTOWN, PA., 107 Station St.
*JOPLIN, MO., 420 School St.
*KANSAS CITY, MO., 101 W. Eleventh St.
*KANSAS CITY, MO., 2124 Wyandotte St.
*KNOXVILLE, TENN., Gay & Clinch St.
*LIMA, OHIO
*LITTLE ROCK, ARK., 1115 West 24th St.
*LITTLE ROCK, ARK., c/o Fones Bros. Hdwe., 2nd & Rock Sts.
*†LOS ANGELES, CALIF., 420 So. San Pedro St.
①*LOUISVILLE, KY., 332 West Broadway
①*MADISON, WISC., 508 Edgewood Ave. P. O. Box 228
①*MANFIELD, OHIO, 246 E. Fourth St.
*MARSHALL, TEXAS, 504 Nathan St.
*MEMPHIS, TENN., 130 Madison Ave.
*MIAMI, FLA., 1036 N. Miami Ave.
*MILWAUKEE, WISC., 546 North Broadway
†MILWAUKEE, WISC., 1669 N. Water St.
*†MINNEAPOLIS MINN., 2303 Kennedy St., N. E.
*MONROE, LA., 1301 N. Fourth St.
*NASHVILLE, TENN., 219 Second Ave. N.
*NEWARK, N. J., 1180 Raymond Blvd.
†NEWARK, N. J., Haynes Ave. & Lincoln Highway
*NEWARK, N. J., Plane & Orange St.
*NEW HAVEN, CONN., 42 Church St., P. O. Box 1817
*NEW ORLEANS, LA., 333 St. Charles St.
*NEW ORLEANS, LA., 527 Poydras St.
*NEW YORK, N. Y., 150 Broadway
①*NEW YORK, N. Y., 150 Varick St.
*NIAGARA FALLS, N. Y., 205 Falls St.
*NORFOLK, VA., City Hall Ave. & Bank St.
*OKLAHOMA CITY, OKLA., 120 N. Robinson St.
*OKLAHOMA CITY, OKLA., Third & Alie Sts.
- *OMAHA, NEB., 409 South Seventeenth St.
*OMAHA, NEB., 117 N. 13th St.
*PEORIA, ILL., 104 E. State St.
*†PHILADELPHIA, PA., 3001 Walnut St.
*PHOENIX, ARIZONA, 11 West Jefferson St.
*PHOENIX, ARIZONA, 425 Jackson St.
*PITTSBURGH, PA., Nuttall Works, 200 McCandless Ave.
*PITTSBURGH, PA., 306 4th Ave., Box 1017
*PITTSBURGH, PA., 543 N. Lang Ave.
*PORTLAND, MAINE, 142 High St.
*PORTLAND, OREGON, 309 S. W. Sixth Ave.
†PORTLAND, OREGON, 2138 N. Interstate Ave.
*PORTLAND, OREGON, 720 N. Thompson St.
*†PROVIDENCE, R. I., 16 Elbow St.
*RALEIGH, N. C., 803 North Person St., P. O. Box 2146
*RALEIGH, N. C., P. O. Box 443
*READING, PA., 619 Spruce St.
①*RICHMOND, VA., 301 S. Fifth St.
*ROANOKE, VA., 726 First St., S.E.
*ROCHESTER, N. Y., 410 Atlantic Ave.
*ROCHESTER, N. Y., 1048 University Ave.
*ROCKFORD, ILL., 130 South Second St.
*SACRAMENTO, CALIF., 1805 20th St.
①*SALT LAKE CITY, UTAH, 10 West First South St.
†SALT LAKE CITY, UTAH, 346 A Pierpoint Ave.
*SAN ANTONIO, TEXAS, 115 W. Travis St.
*SAN FRANCISCO, CALIF., 1355 Market St.
*SAN FRANCISCO, CALIF., 1 Montgomery St.
*SEATTLE, WASH., 603 Stewart St.
†SEATTLE, WASH., 3451 East Marginal Way
*SHARON, PA., 469 Sharpville Ave.
*SIOUX CITY, IOWA, 2311 George St.
*SOUTH BEND, IND., 216 East Wayne St.
*SOUTH BEND, IND., 107 E. Jefferson St.
*SOUTH PHILA. WKS., Essington, Pa.
*SOUTH PHILA. WKS., P. O. Box 7348, Philadelphia, Pa.
①*SPOKANE, WASH., 158 So. Monroe St.
*SPRINGFIELD, ILL., 601 E. Adams St., Box 37
*SPRINGFIELD, MASS., 395 Liberty St.
*SPRINGFIELD, MASS., 653 Page Boulevard
*ST. LOUIS, MO., 411 North Seventh St.
†ST. LOUIS, MO., 717 South Twelfth St.
*SYRACUSE, N. Y., 420 N. Geddes St.
*TACOMA, WASH., 1023 "A" St.
*TAMPA, FLA., 417 Ellamae Ave., Box 230
*TOLEDO, OHIO, 245 Summit St.
①*TRAFFORD CITY, PA.
*TULSA, OKLA., 303 East Brady St.
*†UTICA, N. Y., 113 N. Genesee St.
*WASHINGTON, D. C., 1434 New York Ave., N. W.
①*WATERLOO, IOWA, 328 Jefferson St., P. O. Box 719.
*WICHITA, KAN., 233 So. St. Francis Ave.
*WILKES-BARRE, PA., 267 N. Pennsylvania Ave.
*†WORCESTER, MASS., 32 Southbridge St.
*YORK, PA., 143 So. George St.
*YOUNGSTOWN, OHIO, 25 E. Boardman St.

Where address and P. O. box are both given, send mail to P. O. box, telegrams to address indicated.

WESTINGHOUSE AGENT JOBBERS
Westinghouse Electric Supply Company

Fully equipped sales offices and warehouses are maintained at all addresses

- ALBANY, N. Y., 454 No. Pearl St.
ALLEN TOWN, PA., 522 Maple St.
ATLANTA, GA., 96 Poplar St., N. W.
AUGUSTA, MAINE, 90 Water St.
BALTIMORE, MD., 40 South Calvert St.
BANGOR, MAINE, 175 Broad St.
BINGHAMTON, N. Y., 87 Chenango St.
BOSTON, MASS., 76 Pearl St.
BURLINGTON, VT., 208 Flynn Ave.
BUTTE, MONTANA, 50 East Broadway
CHARLOTTE, N. C., 210 East Sixth St.
CHICAGO, ILL., 113 North May St.
CLEVELAND, OHIO, 3950 Prospect Ave.
COLUMBIA, S. C., 915 Lady St.
DALLAS, TEXAS, 409 Browder St.
DES MOINES, IOWA, 1400 Walnut St.
DETROIT, MICH., 547 Harper Ave.
DULUTH, MINN., 308 W. Michigan St.
EVANSVILLE, IND., 201 N. W. First St.
FLINT, MICH., 1314 N. Saginaw St.
FORT WORTH, TEXAS, 501 Jones St.
GRAND RAPIDS, MICH., 511 Monroe Ave., N. W.
GREENVILLE, S. C., 226 Pendleton St.
HOUSTON, TEXAS, 1903 Ruiz St.
INDIANAPOLIS, IND., 137 S. Pennsylvania St.
JACKSONVILLE, FLA., 37 South Hogan St.
LOS ANGELES, CALIF., 905 East Second St.
MADISON, WISC., 1022 E. Washington Ave.
MIAMI, FLA., 1036 North Miami Ave.
MEMPHIS, TENN., 366 Madison Ave.
MILWAUKEE, WISC., 546 N. Broadway
MINNEAPOLIS, MINN., 215 South Fourth St.
NEWARK, N. J., 49 Liberty St.
NEW HAVEN, CONN., 240 Cedar St.
NEW YORK, N. Y., 150 Varick St.
NORFOLK, VA., 320 City Hall Ave.
OAKLAND, CALIF., Tenth & Alice Sts.
OKLAHOMA CITY, OKLA., 10 E. California St.
OMAHA, NEB., 117 North Thirteenth St.
PEORIA, ILL., 104 East State St.
PHILADELPHIA, PA., 1101 Race St.
PHOENIX, ARIZONA, 315 West Jackson St.
PORTLAND, OREGON, 134 N. W. Eighth Ave.
PROVIDENCE, R. I., 66 Ship St.
RALEIGH, N. C., 322 S. Harrington St.
READING, PA., 619 Spruce St.
RICHMOND, VA., 301 South Fifth St.
ROANOKE, VA., 726 First St., S. E.
ROCHESTER, N. Y., 1048 University Ave.
ST. LOUIS, MO., 1011 Spruce St.
ST. PAUL, MINN., 145 East Fifth St.
SACRAMENTO, CALIF., 20th and R Sts.
SALT LAKE CITY, UTAH, 235 West South Temple St.
SAN ANTONIO, TEXAS, 1211 E. Houston St.
SAN FRANCISCO, CALIF., 260 Fifth St.
SEATTLE, WASH., 558 First Ave., South
SIOUX CITY, IOWA, 1005 Dace St.
SPOKANE, WASH., 152 So. Monroe St.
SPRINGFIELD, MASS., 46 Hampden St.
SYRACUSE, N. Y., 961 W. Genesee St.
TAMPA, FLA., 417 Ellamae St.
TERRE HAUTE, IND., 234 S. 3rd St.
TOLEDO, OHIO, 812 Lafayette St.
TRENTON, N. J., 245 N. Broad St.
TULSA, OKLA., 303 East Brady St.
UTICA, N. Y., 113 N. Genesee St.
WASHINGTON, D. C., 1216 "K" St., N. W.
WATERLOO, IOWA, 328 Jefferson St.
① WICHITA, KANSAS, 233 So. St. Francis Ave.
WILMINGTON, DEL., 216 E. Second St.
WORCESTER, MASS., 24 Southbridge St.
YORK, PA., 143 S. George St.

*Sales Office † Service Shop x Works # Warehouse ° First Class Mail Only § Merchandising Products Only z Headquarter,
† Apparatus Products Only ① Changed or added since previous issue.



WESTINGHOUSE AGENT JOBBERS—Continued

Other Agent Jobbers

ABILENE, KAN., Union Electric Co.
 AKRON, OHIO, The Moock Electric Supply Co.
 BIRMINGHAM, ALA., Moore-Handley Hdwe. Co.
 BLUEFIELD, W. VA., Superior-Sterling Co.
 BUFFALO, N. Y., McCarthy Bros. & Ford
 CANTON, OHIO, The Moock Electric Supply Co.
 CHATTANOOGA, TENN., Mills & Lupton Supply Co.
 CHICAGO, ILL., Hyland Electrical Supply Co.

CINCINNATI, OHIO, The Johnson Electric Supply Co.
 COLUMBUS, OHIO, Pixley Electric Supply Co.
 DENVER, COL., The Mine & Smelter Supply Co.
 EL PASO, TEX., Mine & Smelter Supply Co.
 ERIE, PA., Star Electrical Co.
 HUNTINGTON, W. VA., Banks-Miller Supply Co.
 KANSAS CITY, MO., Columbian Elect'l Co.
 KANSAS CITY, MO., Continental Elec. Co.

LOUISVILLE, KY., Tafel Electric Co.
 MONROE, LA., Monroe Hardware Co.
 NASHVILLE, TENN., Tafel Electric Co.
 NEW ORLEANS, LA., Electrical Supply Co.
 NEW YORK, N. Y., Times Appliance Co., Inc.
 PITTSBURGH, PA., Iron City Electric Co.
 SAN DIEGO, CALIF., The Electric Supplies Distributing Co.
 SCRANTON, PA., Penn Elect'l Engineering Co.
 YOUNGSTOWN, OHIO, Moock Electric Supply Co.

WESTINGHOUSE ELECTRIC & MFG. CO., LAMP DIVISION

*ALBANY, N. Y., 456 N. Pearl St.
 #ATLANTA, GA., 426 Marietta St.
 *BALTIMORE, MD., 118 E. Lombard St.
 xBELLEVILLE, N. J., 720 Washington Ave.
 xBLOOMFIELD, N. J., Clearfield Ave.
 *BOSTON, MASS., 10 High St.
 ①BOSTON, MASS., 235 Old Colony Ave., S. Boston, Mass.
 *BUFFALO, N. Y., 295 Main St.
 *CHICAGO, ILL., 20 North Wacker Drive
 #CHICAGO, ILL., 2211 W. Pershing Road
 *CINCINNATI, OHIO, Third & Elm Sts.
 *CLEVELAND, OHIO, 1216 W. 58th St.
 *COLUMBUS, OHIO, Gay & Third St.
 *DALLAS, TEXAS, 209 Browder St.
 *DAVENPORT, IOWA, 206 East Second St.
 *DENVER, COLO., 210 Fifteenth St.
 *DES MOINES, IOWA, 218 West Second St.

*DETROIT, MICH., 5757 Trumbull Ave.
 ①EMERYVILLE, CALIF., 5915 Green St.
 *HOUSTON, TEXAS, 1314 Texas Ave.
 *HUNTINGTON, W. VA., 1029 Seventh Ave.
 *INDIANAPOLIS, IND., 137 So. Penna. Ave.
 *JACKSON, MICH., Consumers Power Bldg.
 *KANSAS CITY, MO., 101 W. Eleventh St.
 #LOS ANGELES, CALIF., 420 S. San Pedro St.
 *LOUISVILLE, KY., 332 West Broadway
 *MEMPHIS, TENN., 130 Madison St.
 *MILWAUKEE, WISC., 546 North Broadway
 *MINNEAPOLIS, MINN., 2303 Kennedy St., N. E.
 *NEW ORLEANS, LA., 333 St. Charles St.
 yNEW YORK, N. Y., 150 Broadway
 *OKLAHOMA CITY, OKLA., 10 E. California St.
 *OMAHA, NEB., 409 So. Seventeenth St.

*PHILADELPHIA, PA., 3001 Walnut St.
 *PITTSBURGH, PA., 306 4th Ave., Box 1017
 #PITTSBURGH, PA., Try St. Terminal Bldg.
 *ROCHESTER, N. Y., 1048 University Ave.
 *SALT LAKE CITY, UTAH, 10 West First South St.
 *SAN FRANCISCO, CALIF., 1 Montgomery St.
 #SAN FRANCISCO, CALIF., 60 Federal St.
 *SEATTLE, WASH., 603 Stewart St.
 #SEATTLE, WASH., 3451 East Marginal Way
 *ST. LOUIS, MO., 411 No. Seventh St.
 #ST. LOUIS, MO., 1219-21 Gratiot St.
 *SYRACUSE, N. Y., 109 So. Warren Street
 *TOLEDO, OHIO, 245 Summit St.
 xTRENTON, N. J., 400 Pennington Ave.
 *WASHINGTON, D. C., 1434 N. Y. Ave., N. W.

WESTINGHOUSE ELECTRIC ELEVATOR COMPANY

BALTIMORE, MD., 39 West Lexington Ave.
 ①BOSTON, MASS., 164 Stuart St.
 BROOKLYN, N. Y., 528 Bergen St.
 *BUFFALO, N. Y., 826 Ellicott Sq. Bldg.
 xCHICAGO, ILL., 1500 North Branch St.
 CHICAGO, ILL., 222 No. Bank Drive
 CINCINNATI, OHIO, Third & Elm Sts.
 CLEVELAND, OHIO, 842 Rockefeller Bldg.
 ①COLUMBUS, OHIO, 85 E. Gay St.
 DALLAS, TEXAS, 209 Browder St.

DENVER, COLO., 1052 Gas & Electric Bldg.
 DES MOINES, IOWA, 1408 Walnut St.
 DETROIT, MICH., 5757 Trumbull Ave.
 ①DUBUQUE, IOWA, 435 Curtis St.
 HOUSTON, TEXAS, 2315 Commerce St.
 INDIANAPOLIS, IND., 551 W. Merrill St.
 xJERSEY CITY, N. J., 150 Pacific Ave.
 KANSAS CITY, MO., 101 W. Eleventh St.
 LOS ANGELES, CALIF., 420 So. San Pedro St.

NEWARK, N. J., 14 Bridge St.
 NEW YORK, N. Y., 9 Rockefeller Plaza
 NEW YORK, N. Y., 128 E. 149 St.
 PHILADELPHIA, PA., 3001 Walnut St.
 PITTSBURGH, PA., 435 Seventh Ave.
 PORTLAND, ORE., 415 Terminal Sales Bldg.
 ST. LOUIS, MO., 411 North Seventh St.
 SAN FRANCISCO, CALIF., 1 Montgomery St.
 ①STEBENVILLE, OHIO, 308 Natl. Exch. Bldg.
 WASHINGTON, D. C., 1112 21st St., N. W.

WESTINGHOUSE ELECTRIC INTERNATIONAL COMPANY

zNEW YORK CITY, N. Y., 150 Broadway
 *LONDON, W. C. 2, ENGLAND, 2 Norfolk St., Strand
 *SYDNEY, AUSTRALIA, Box 2634-EE, G.P.O.
 *RIO DE JANEIRO, BRAZIL, Caixa Postal 687
 *SANTIAGO, CHILE, Casilla 1897
 *MILANO, ITALY, Piazza Crispi 3
 *WELLINGTON, NEW ZEALAND, 2 Taranaki St.
 *LIMA, PERU, Edificio Wiese, Esquina Nunez y Filipinas

*MANILA, P. I., P. O. Box 998
 *PANAMA, Republic of Panama, P.O. Box 112
 *SAO PAULO, BRAZIL, Caixa Postal 636
 *SAN JUAN, Puerto Rico, P. O. Box 1539
 *CIA. WESTINGHOUSE INTERNACIONAL S. A. Rivadavia 819, Buenos Aires, Argentine
 *CIA. WESTINGHOUSE ELEC. DE CUBA, Manzanera de Gomez, 232-236 Apartado 2289, Havana, Cuba

*WESTINGHOUSE ELEC. CO., OF INDIA LTD. Feltham House, Graham Road, Ballard Estate, Bombay, India
 *CIA. WESTINGHOUSE ELEC. INTERNACIONAL Edificio la Nacional Apartado 78-Bis. Mexico, D. F. Mexico
 *MEXICO, (West Coast) Mr. John H. Knost, 1248 East Fifth St., Tucson, Arizona
 *WESTINGHOUSE ELEC. CO. OF SOUTH AFRICA, LTD., P. O. Box 6067, Johannesburg, South Africa

WESTINGHOUSE X-RAY COMPANY, INC.

*ATLANTA, GA., 565 W. Peachtree St., N. E.
 *BALTIMORE, MD., 118 East Lombard St.
 *BOSTON, MASS., 270 Commonwealth Ave.
 *CHICAGO, ILL., 512 S. Peoria St.
 *CLEVELAND, OHIO, 7016 Euclid Ave.

*DALLAS, TEXAS, 207 Browder St.
 #DETROIT, MICH., 5757 Trumbull Ave.
 xLONG ISLAND CITY, N. Y., 21-16 43rd Ave.
 *LOS ANGELES, CALIF., 420 S. San Pedro St.
 *MILWAUKEE, WISC., 534 North Broadway
 *NEW ORLEANS, LA., 608 Commercial Place

*NEW YORK, N. Y., 173 E. Eighty-Seventh St.
 *OMAHA, NEB., 117 N. Thirteenth St.
 *PHILADELPHIA, PA., 3001 Walnut St.
 *PITTSBURGH, PA., 3702 Fifth Ave.
 *ROCHESTER, N. Y., 41 Chestnut St.
 *SAN FRANCISCO, CALIF., 870 Market St.

BRYANT ELECTRIC COMPANY

*BOSTON, MASS., 10 High St.
 xBRIDGEPORT, CONN., Main Plant, 1421 State St.
 xBRIDGEPORT, CONN., Plastics Division Plant, 1105 Railroad Ave.
 *CHICAGO, ILL., 844 West Adams St.
 ①LOS ANGELES, CALIF., 420 S. San Pedro St.
 ①NEW YORK, N. Y., 101 Park Ave.
 *SAN FRANCISCO, CALIF., 325 Ninth St.

WESTINGHOUSE RADIO STATIONS

STATION KDKA, 310 Grant St., Pittsburgh, Pa.
 STATION WBZ, 271 Tremont St., Boston, Mass.
 STATION KYW, 1619 Walnut St., Philadelphia, Pa.
 STATION WBZA, Hotel Kimball, Springfield, Mass.
 STATION WOWO, 925 So. Harrison St., Fort Wayne, Ind.
 STATION WGL, 925 So. Harrison St., Fort Wayne, Ind.

CANADIAN WESTINGHOUSE COMPANY, LIMITED

*CALGARY, 320 Eighth Avenue West, Calgary, Alberta, Can.
 *EDMONTON, 10127, 104th St., Armstrong Block, Edmonton, Alberta, Can.
 *FORT WILLIAM, 112 McVicar St., Fort William, Ontario, Can.
 *HALIFAX, 158 Granville St., Halifax, Nova Scotia, Can.
 xHAMILTON, Hamilton, Ontario, Can.
 *LONDON, 504 Huron & Erie Bldg., London, Ontario, Canada
 *MONTREAL, 1135 Beaver Hall Hill, Montreal, Quebec, Can.
 *MONTREAL, 400 McGill St., Montreal, Quebec, Can.
 #MONTREAL, 1844 William St., Montreal, Quebec, Can.

*NELSON, B. C., Can., P. O. Box 1124
 *OTTAWA, Ahearn & Soper Limited, P. O. Box 779, Ottawa, Ontario, Can.
 *REGINA, 2408 Eleventh Ave., Regina, Saskatchewan, Can.
 *SASKATOON, 238 First Ave. N., Saskatchewan, Canada
 *SWASTIKA, Childs Ave., Swastika, Ontario, Canada
 *TORONTO, 355 King St. West, Toronto, Ontario, Can.
 *VANCOUVER, 1418 Marine Bldg., Vancouver, B. C., Can.
 *VANCOUVER, 1090 Homer St., Vancouver, B. C., Can.
 *WINNIPEG, 158 Portage Ave. East, Winnipeg, Manitoba, Can.

① Changed or added since previous issue.

* Sales Office † Service Shop x Works # Warehouse z Headquarters y Executive Office § Merchandising Products Only

† Apparatus Products Only





WESTINGHOUSE
ELECTRIC AND MANUFACTURING COMPANY

EAST PITTSBURGH



PENNSYLVANIA